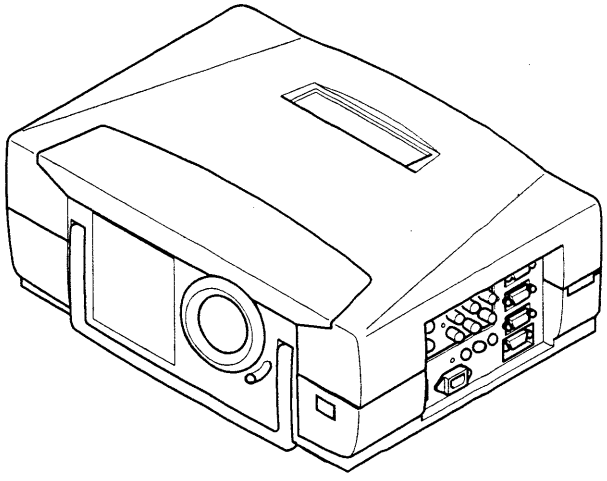
HITACHI

YK | No. 0493E

SERVICE MANUAL

CP-L850WX
CP-L850E



Outline

Compared with CP-L850W/E, the main difference is the optical engine, which has improved image quality (uniformity) by redesigning the illumination system.
Some adjustments are different too, so read this manual.

Caution

Be sure to read this manual before servicing. To assure safety from fire, electric shock, injury, harmful radiation and materials, various measures are provided in this Hitachi liquid crystal projector. Be sure to read cautionary items described in the manual to maintain safety before servicing.

Service Warning

1. When replace the lamp, to avoid burns to your fingers. The lamp becomes too hot.
2. Never touch the lamp bulb with a finger or anything else. Never drop it or give it a shock. They may cause bursting of the bulb.
3. This projector is provided with a high voltage circuit for the lamp. Do not touch the electric parts of power unit (main), when turn on the projector.
4. Do not touch the exhaust fan, during operation.
5. The LCD module ass'y is likely to be damaged. If replacing to the LCD module ass'y, do not hold the FPC of the LCD module ass'y.

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SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

Liquid Crystal Projector

April 1999 Digital Media Systems Division

1. Features

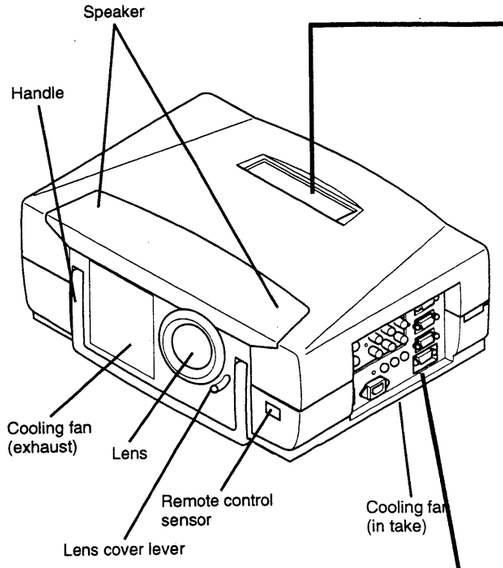
- 1.3" polysilicon liquid crystal panel
- 260W metal halide lamp
- Video input compatible with NTSC/PAL/SECAM video signals
- RGB input compatible with IBM® PCs, Macintosh® and NEC® PC98 computer signals
- Power zoom and power focus
- 2 VIDEO IN systems, 2 RGB IN systems, and 1 RGB OUT system
- RS232C communication
- Mouse emulation

2. Specifications

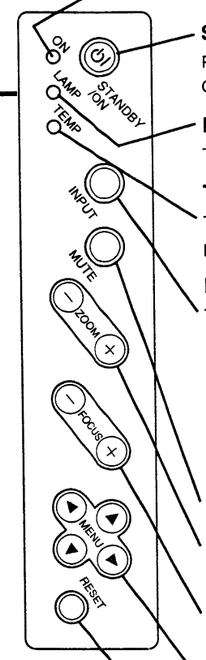
Liquid crystal panel	Drive system	TFT active matrix
	Panel size	1.3inches
	Number of pixels	800 (H) x 600 (V)
Lamp		Metal halide lamp 260W
Video input	System	NTSC, PAL or SECAM
	Level	Composite 1.0Vp-p (75Ω termination) Y/C Y : 1.0Vp-p (75Ω termination) C : 0.286Vp-p (NTSC burst signal, 75Ω termination) 0.3Vp-p (PAL/SECAM burst signal, 75Ω termination)
RGB input / output	Video signal	Analog RGB input 0.7Vp-p (75Ω termination)
	Sync signal	H/V separate or H/V composite, TTL level
Audio	Input	200mVrms, 20kΩ or less
	Output	0~200mVrms, 1kΩ
Speaker output		2W + 2W (stereo)
Power supply		AC100~120V/5A,AC220~240V/2.2A (50/60Hz)
Power consumption		370W
Dimensions		404 (W) x 146 (H) x 307 (D) mm
Weight		7.9kg
Temperature range		Operation : 0~35˚C Storage : -20~60˚C
Accessories		Remote control ·····1 Batteries AA (or R6P) ·····2 Power cord ·····3 Stereo mini cable ·····1 MAC adapter ·····1 VGA signal cable ·····1 Video/Audio cable ·····1 Mouse cable ·····3 S-Video cable ·····1

3. Names of each part

●Main unit



●Operation section



ON indicator
This blinks in the standby mode and lights in the operation mode.

STANDBY/ON button
Power ON/OFF button.
OFF sets the unit in standby mode.

LAMP indicator
This lights when the lamp does not light.

TEMP indicator
This lights when temperature inside the projector is too high.

INPUT button
To select the input source.

RGB1 → RGB2 → VIDEO1 → VIDEO2

MUTE button

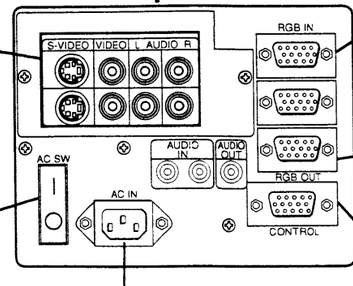
ZOOM button
Adjusts picture size.

FOCUS button
Adjusts focus.

MENU button
Picture adjustments.

RESET button
Resets unit to factory settings.

●Input terminal section



VIDEO input terminal
S-VIDEO input terminal
Mini DIN-4pin connector (1/2)
VIDEO input terminal
RCA Jack (1/2)
AUDIO L/R input terminal
RCA Jack (1/2)

MAIN POWER switch
Main power ON/OFF switch.
○ : OFF
| : ON

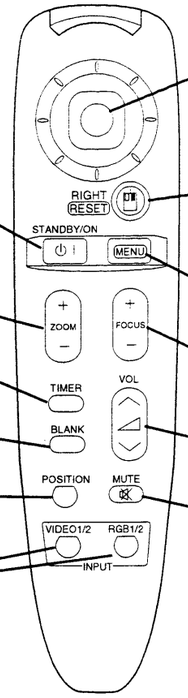
AC inlet with filter
Connect the provided power supply cord.

RGB input terminal
RGB input terminal
D-sub 15pin shrink terminal (1/2)
AUDIO input terminal
Stereo mini jack (1/2)

RGB output terminal
RGB output terminal
D-sub 15pin shrink terminal
AUDIO output terminal (RGB/VIDEO)
Stereo mini jack

CONTROL terminal
D-sub 15pin terminal

Remote control transmitter



STANDBY / ON button
Power ON/OFF button.
OFF sets the unit in standby mode.

ZOOM button
Adjusts picture size.

TIMER ON / OFF button
Displays or removes the time setting menu item TIMER.

BLANK ON / OFF button
BLANK ON is removed picture.

POSITION button
Removes picture position with MENU STICK SWITCH.

INPUT SELECT button
Selects the input source.

MENU STICK SWITCH
When displays the on-screen menus, selects or adjusts the menu items.
When removes the on-screen menus, works as the mouse included left button.

RESET / RIGHT button
When displays the on-screen menus, resets the menu item to factory settings.
When removes the on-screen menus, works as right quick button.

MENU ON / OFF button
Displays or removes the on-screen menus.

FOCUS button
Adjusts focus.

VOLUME button
Adjusts volume.

MUTE button

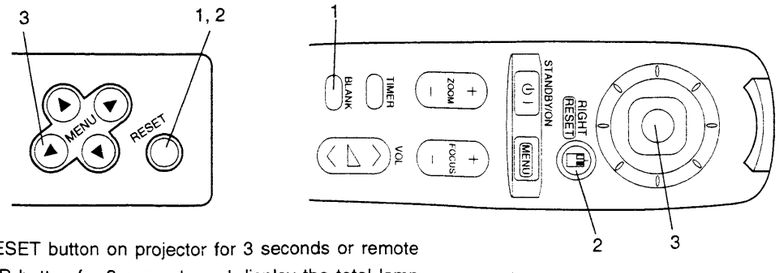
Function for service

Function	Operation
Displayed the operating time of the lamp	Press the RESET button of the projector or the TIMER button of the remote control, for 3 seconds.
Reset the operating time of the lamp	Press the RESET button of the projector or the remote control, for 3 seconds. (During be displayed the operating time of the lamp.)
Displayed the operating time of the projector	Press the MUTE button of the projector or the remote control, for 3 seconds. (During be displayed the operating time of the lamp.)

When replacing the lamp, Reset the operating time of lamp.

Reset the lamp timer :

Please carry out the following operation within 10 minutes from power on, if you replaced the lamp after 2,000 hours.



1) Press the RESET button on projector for 3 seconds or remote control TIMER button for 3 seconds and display the total lamp used time.
2) Press the RESET button during displaying the lamp used time.
3) Select the "0" on the screen using the MENU (◄) button or MENU STICK SWITCH.

LAMP 1501 hr

LAMP 1501 □→0 ■CANCEL

Message table

On-screen display

The following messages are displayed on the screen.

CHANGE THE LAMP	Lamp has 1,900 hours on it and may need to be changed.
"CHANGE THE LAMP" "CALL A MAINTENANCE PERSON." "THE POWER WILL TURN OFF AFTER 20 Hr."	Lamp has 1,980 hours on it. See P.4 "Reset the lamp timer"
Blinking of "CHANGE THE LAMP"	When the lamp has 2,000 hours or more on it, the message will blink, and the power will turns off after 10 minutes.
NO INPUT IS DETECTED	Signal is not input.
SYNC IS OUT OF RANGE	The horizontal frequency of the input signal exceeds the range of the projector, it cannot be displayed.

Indicator display

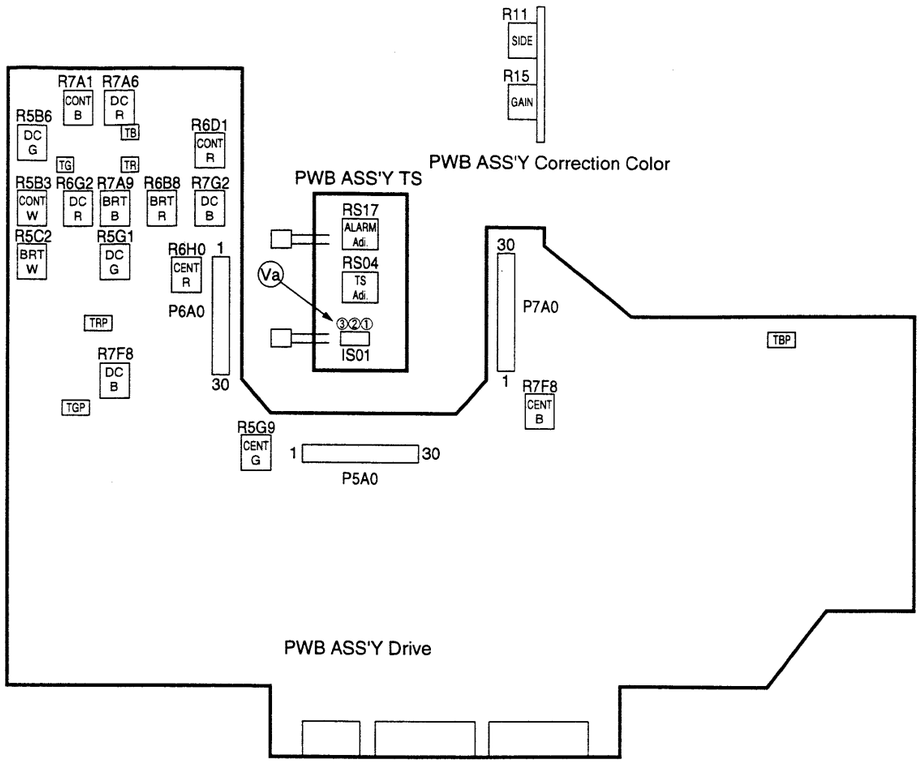
The ON indicator, LAMP indicator and TEMP indicator will light or blink in the following cases.

	Indicator status	Meaning	Remedy
ON indicator	Lights orange	Standby mode	———
	Blinks green	During warming up	———
	Lights green	During operation	———
	Blinks orange	During cooling down	———
LAMP indicator	Lights red	Lamp cannot light	Cool projector by power off for 20 minutes.
	Blinks red	Lamp removed or imperfectly assemble	———
TEMP indicator	Lights red	Temperature inside too high	Correctly reinstall so as not to block ventilation holes.
	Blinks red	Cooling fan accident	call a maintenance person.

*When the LAMP indicator lights, turn the power off. If the problem cannot be recovered, contact your dealer.

4. Adjustment

4 - 1 Position to be adjusted



4 - 2 White balance adjustment

Preparations for adjustment

1. Setting of condition

①Apply heat-running for 10 minutes or more before adjustment.

②Project 40 inches size image with the "+" zoom button set to maximum.

③Press the RESET button of the remote control transmitter to set picture adjustment to NORMAL.

2. Adjustment output DC level of video AMP circuit.

①Apply heat-running for 10 minutes or more before adjustment.

②No input signal.

③Adjust R5B6 so that voltage at TG test-point of I5A0 is 6.0±0.05V.

④Adjust R7A6 so that voltage at TR test-point of I6A0 is 6.0±0.05V.

⑤Adjust R7G2 so that voltage at TB test-point of I7A0 is 6.0±0.05V.

⑥Adjust R6G2 so that voltage at TRP test-point of I6A5 is 6.0±0.05V.

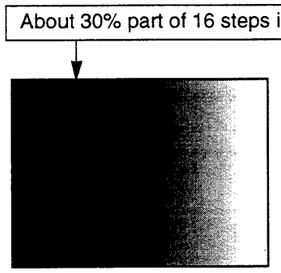
⑦Adjust R5G1 so that voltage at TGP test-point of I5A4 is 6.0±0.05V.

⑧Adjust R7E8 so that voltage at TBP test-point of I7A3 is 6.0±0.05V.

3. Adjustment output Center level of video AMP circuit.
Refer to the attached drawing.

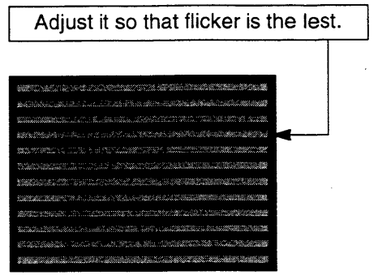
①Input 16 steps monochrome green with a timing signal of SVGA VESA(60).
Adjust R5G9 so that brightness at about 30% part of 16 steps is the darkest.

②Input 16 steps monochrome red with a timing signal of SVGA VESA(60).
Adjust R6H0 so that brightness at about 30% part of 16 steps is the darkest.



③Input 16 steps monochrome blue with a timing signal of SVGA VESA(60).
Adjust R7F8 so that brightness at about 30% part of 16 steps is the darkest.

④Input horizontal green line (gray/black) signal with a timing signal of SAGA VESA(60).
Adjust R5G9 so that flicker is the lest.



Adjustment Procedure

1. Adjustment of color shading correction

①Apply heat-running for 10 minutes or more before adjustment.

②Input gray pattern at 0.35Vp-p with a timing signal of SVGA VESA(60).

③Set R11(SIDE) to the clockwise end.

④Set R15(GAIN) to the clockwise end.

2. Adjustment of white balance.

①Input 16 steps monochrome green at 0.7Vp-p with a timing signal of SVGA VESA(60).

②Set "CONTRAST" of MENU to +5 steps from center.

③Adjust R5B3(W SUB CONTRAST) and R5C2(W SUB BRIGHT) so that both sides signal level is almost the same but slightly different by visual inspection. (Between 1st step and 2nd step. Between 15th step and 16th step.)
If this readjustment is needed, preset R11(SIDE) and R15(GAIN) at the clockwise end at first.

④Input white pattern at 0.7Vp-p with a timing signal at SVGA VESA(60).

⑤Set "BRIGHT" and "CONTRAST" of MENU to maximum.

⑥Check the chromaticity at the center of the picture, that is X=A, Y=B.

⑦Set "BRIGHT" and "CONTRAST" of MENU to center.

⑧Input white pattern at 0.35Vp-p with a timing signal at SVGA VESA(60).

⑨Adjust R15(GAIN) and R11(SIDE) so that color uniformity is best,.....visual check.
R15(GAIN) is Coarse adjustment.
R11(SIDE) is Fine adjustment.
Basically the clockwise end is best setting on R11(SIDE).

⑩Adjust R6B8(R SUB BRIGHT) and R7A9(B SUB BRIGHT) so that the chromaticity at the center of the picture is X=A-0.030±0.01 , Y=B-0.050±0.01 (middle-brightness white balance) using Minolta CL-100.

⑪Input white pattern at 0.52Vp-p with a timing signal of SVGA VESA(60).

⑫Adjust R6D1(R SUB CONTRAST) and R7A1(B SUB CONTRAST) so that the chromaticity at the center of the picture is X=A-0.025±0.01 , Y=B-0.040±0.01 (high-brightness white balance) using Minolta CL-100.

⑬Repeat ⑧ to ⑫ and adjust middle-brightness and high-brightness white balance.

4 - 3 Convergence adjustment

Preparations for adjustment

①Apply heat-running for 10 minutes or more before adjustment.

②Input a cross-hatch signal to the RGB input terminal with a timing signal of SVGA VESA (60).

③Project about a 40" size image and adjust H.PHASE so that the vertical lines of cross-hatch pattern are seen most clear.

④Loosen 2 screws ⓐ of both the R and B panel's metal fittings. (See Figs.4 - 1 and 4 - 2.)

(Note) Do not loosen screws ⓐ too much. If they are loosened too much, the convergence may drift when they are tightened.

(Note) Exclusive tools are required to adjust convergence.

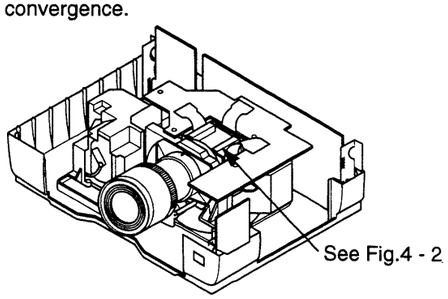


Fig.4 - 1

Adjustment procedure

①Regarding the G panel as standard, adjust the convergence at the picture center of the R panel using ⓑ for the vertical direction, ⓒ for the horizontal direction.

②Adjust the convergence at the edge of the picture using ⓓ .

③Then, regarding the G panel as standard, adjust the convergence of B panel in the same procedure as ① and ②.

④Repeat steps ① to ③ and adjust so that convergence of whole picture satisfy the following values.

	Adjustment value
Horizontal	±1dot
Vertical	±1dot

G is a standard

⑤Tighten 4 screws to fix panels.

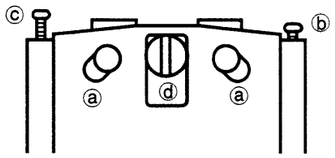


Fig.4 - 2

4 - 4 Sensor adjustment

Preparations for adjustment

①Apply heat-running for 10 minutes or more before adjustment.

Adjustment Procedure

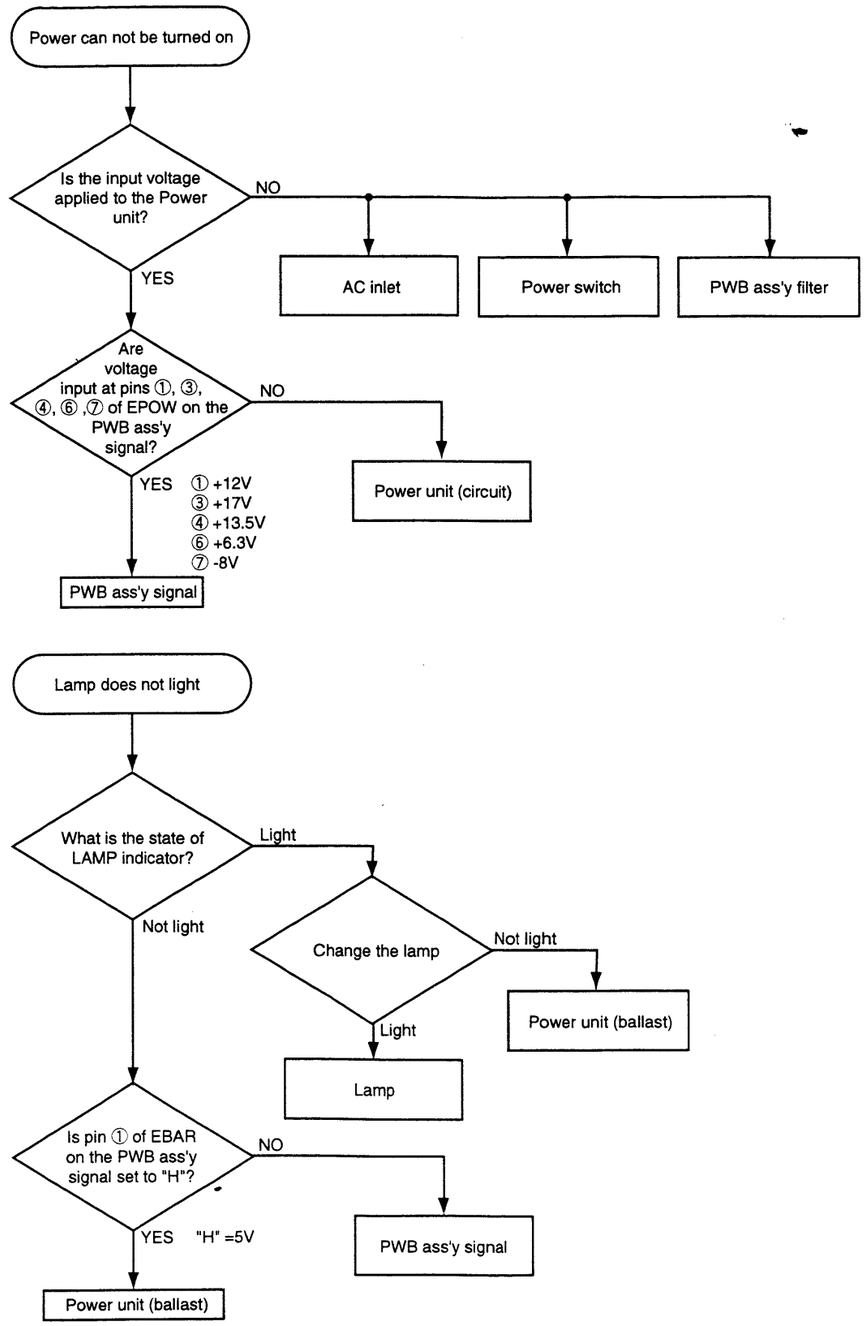
①Set RS17(ALARM ADJ) and RS04(TS ADJ) to mechanical center.

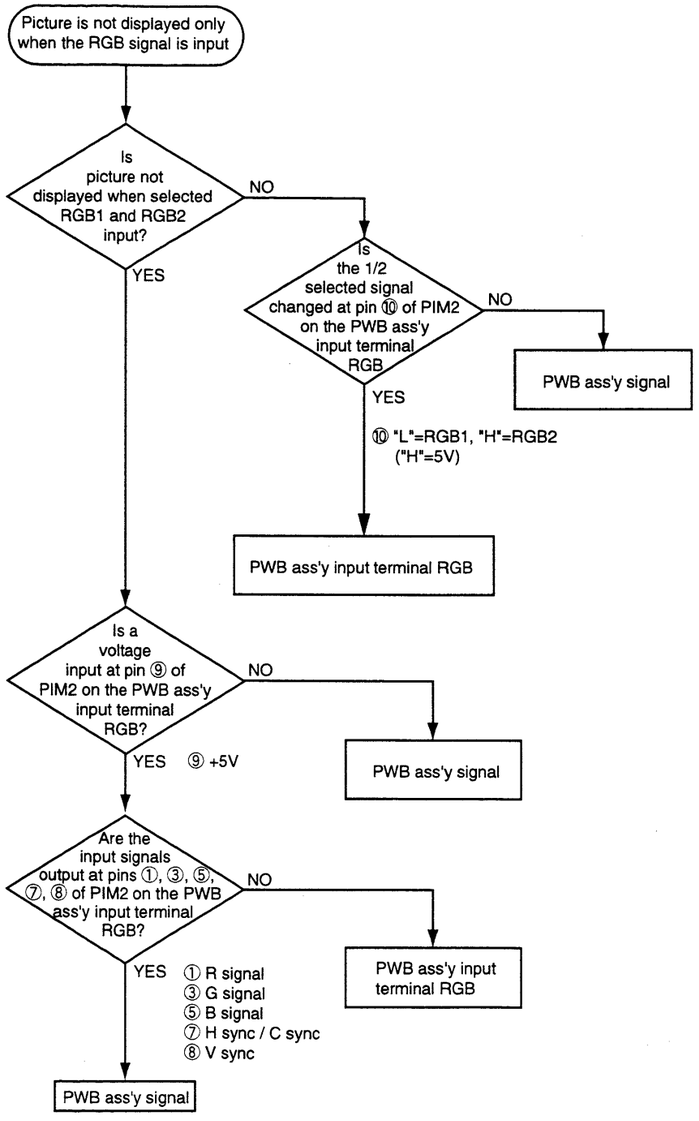
②Turn RS04(TS ADJ) to the clockwise a quarter.

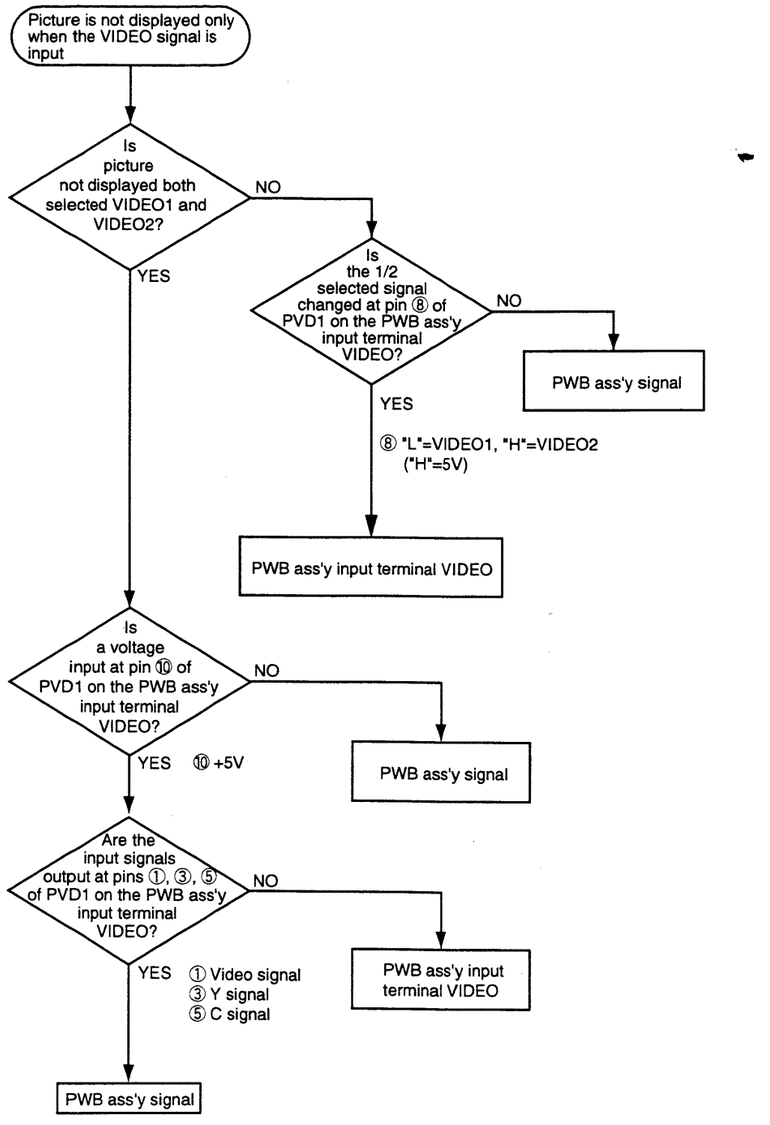
③Measure the point (Ⓥa).

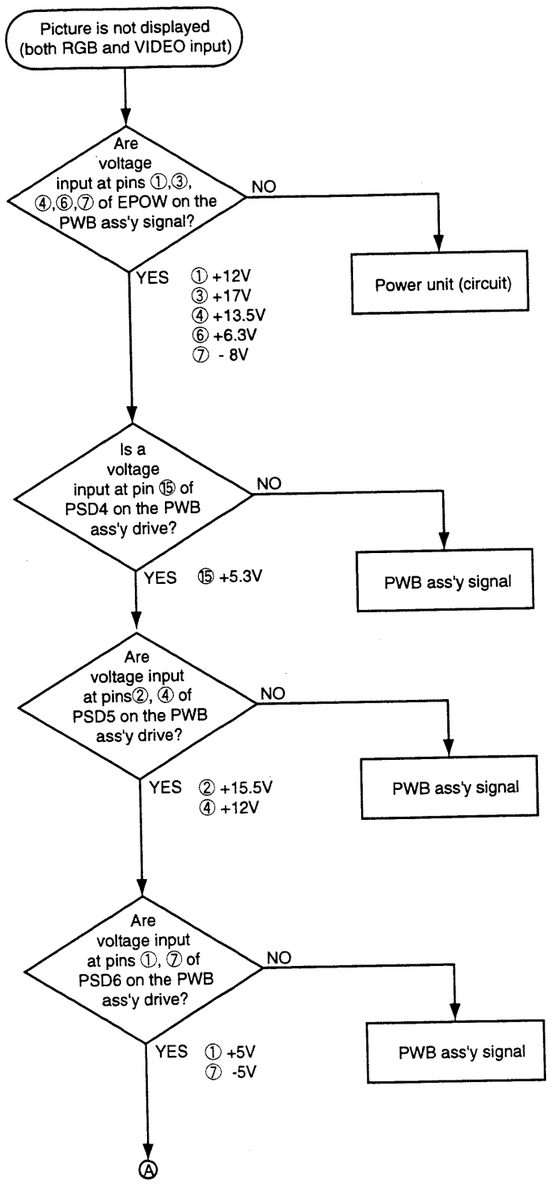
④Adjust RS04(TS ADJ) so that IS01(1) is ((Ⓥa)-20mV±2mV).

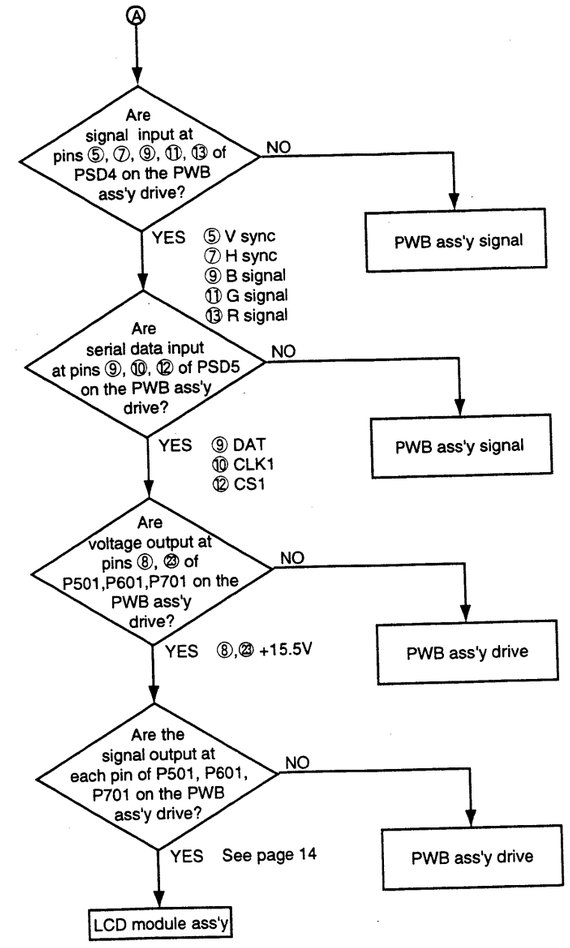
5. Troubleshooting

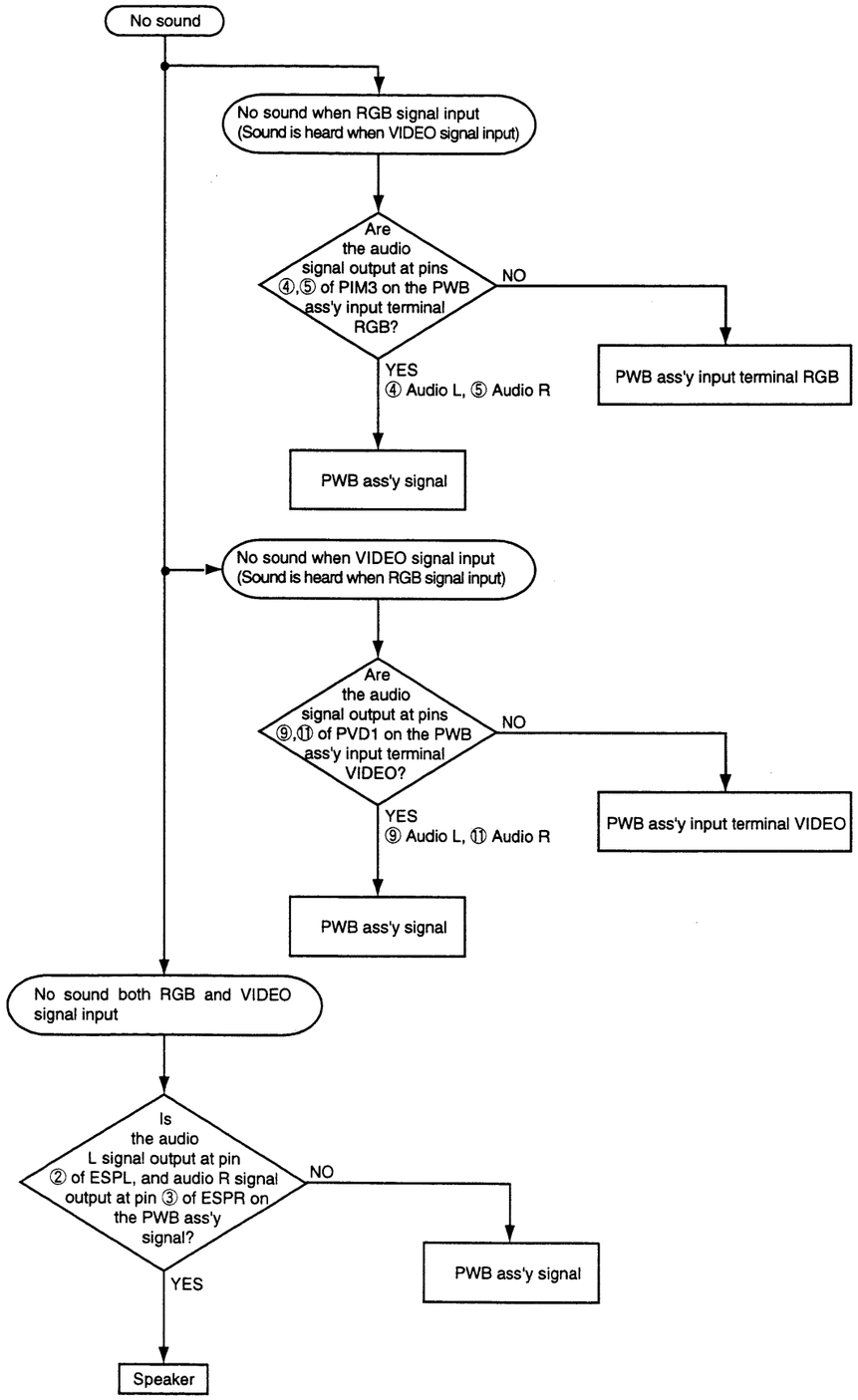


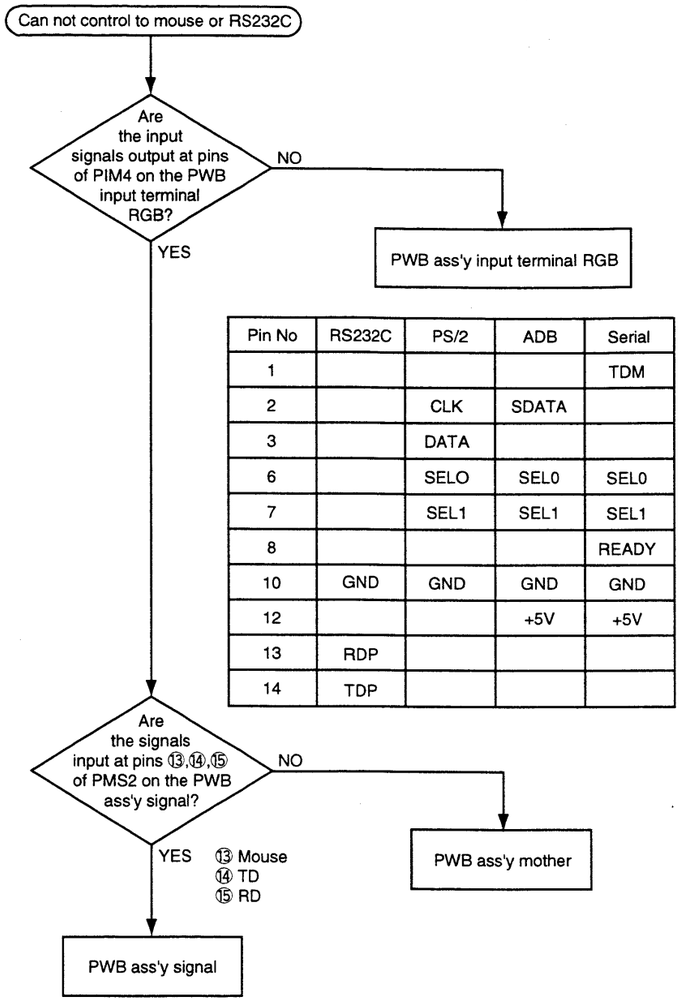

Picture is not displayed only when the RGB signal is input
Is picture not displayed when selected RGB1 and RGB2 input?
NO
YES
Is the 1/2 selected signal changed at pin ⑩ of PIM2 on the PWB ass'y input terminal RGB
NO
YES
PWB ass'y signal
⑩ "L"=RGB1, "H"=RGB2 ("H"=5V)
PWB ass'y input terminal RGB
Is a voltage input at pin ⑨ of PIM2 on the PWB ass'y input terminal RGB?
NO
YES ⑨ +5V
PWB ass'y signal
Are the input signals output at pins ①, ③, ⑤, ⑦, ⑧ of PIM2 on the PWB ass'y input terminal RGB?
NO
YES
① R signal
③ G signal
⑤ B signal
⑦ H sync / C sync
⑧ V sync
PWB ass'y input terminal RGB
PWB ass'y signal


Picture is not displayed only when the VIDEO signal is input
Is picture not displayed both selected VIDEO1 and VIDEO2?
NO
YES
Is the 1/2 selected signal changed at pin ⑧ of PVD1 on the PWB ass'y input terminal VIDEO?
NO
YES
PWB ass'y signal
⑧ "L"=VIDEO1, "H"=VIDEO2 ("H"=5V)
PWB ass'y input terminal VIDEO
Is a voltage input at pin ⑩ of PVD1 on the PWB ass'y input terminal VIDEO?
NO
YES ⑩ +5V
PWB ass'y signal
Are the input signals output at pins ①, ③, ⑤ of PVD1 on the PWB ass'y input terminal VIDEO?
NO
YES
① Video signal
③ Y signal
⑤ C signal
PWB ass'y input terminal VIDEO
PWB ass'y signal


Picture is not displayed (both RGB and VIDEO input)
Are voltage input at pins ①,③, ④,⑥,⑦ of EPOW on the PWB ass'y signal?
NO
Power unit (circuit)
YES ① +12V ③ +17V ④ +13.5V ⑥ +6.3V ⑦ - 8V
Is a voltage input at pin ⑮ of PSD4 on the PWB ass'y drive?
NO
PWB ass'y signal
YES ⑮ +5.3V
Are voltage input at pins②, ④ of PSD5 on the PWB ass'y drive?
NO
PWB ass'y signal
YES ② +15.5V ④ +12V
Are voltage input at pins ①, ⑦ of PSD6 on the PWB ass'y drive?
NO
PWB ass'y signal
YES ① +5V ⑦ -5V
Ⓐ


Ⓐ
Are signal input at pins ⑤, ⑦, ⑨, ⑪, ⑬ of PSD4 on the PWB ass'y drive?
NO
PWB ass'y signal
YES ⑤ V sync ⑦ H sync ⑨ B signal ⑪ G signal ⑬ R signal
Are serial data input at pins ⑨, ⑩, ⑫ of PSD5 on the PWB ass'y drive?
NO
PWB ass'y signal
YES ⑨ DAT ⑩ CLK1 ⑫ CS1
Are voltage output at pins ⑧, ㉔ of P501,P601,P701 on the PWB ass'y drive?
NO
PWB ass'y drive
YES ⑧,㉔ +15.5V
Are the signal output at each pin of P501, P601, P701 on the PWB ass'y drive?
NO
PWB ass'y drive
YES See page 14
LCD module ass'y

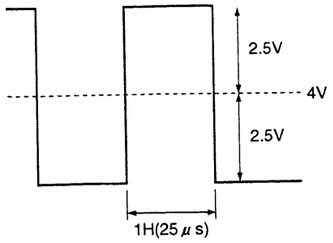

No sound
No sound when RGB signal input
(Sound is heard when VIDEO signal input)
Are the audio signal output at pins ④,⑤ of PIM3 on the PWB ass'y input terminal RGB?
NO
YES
④ Audio L, ⑤ Audio R
PWB ass'y input terminal RGB
PWB ass'y signal
No sound when VIDEO signal input
(Sound is heard when RGB signal input)
Are the audio signal output at pins ⑨,⑪ of PVD1 on the PWB ass'y input terminal VIDEO?
NO
YES
⑨ Audio L, ⑪ Audio R
PWB ass'y input terminal VIDEO
PWB ass'y signal
No sound both RGB and VIDEO signal input
Is the audio L signal output at pin ② of ESPL, and audio R signal output at pin ③ of ESPR on the PWB ass'y signal?
NO
YES
PWB ass'y signal
Speaker


Can not control to mouse or RS232C
Are the input signals output at pins of PIM4 on the PWB input terminal RGB?
NO
YES
PWB ass'y input terminal RGB
Are the signals input at pins ⑬,⑭,⑮ of PMS2 on the PWB ass'y signal?
NO
YES
⑬ Mouse
⑭ TD
⑮ RD
PWB ass'y mother
PWB ass'y signal

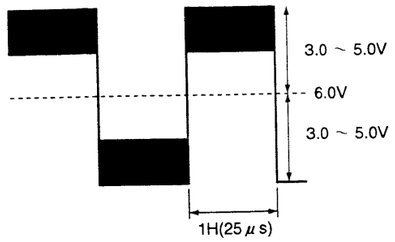
Pin No	RS232C	PS/2	ADB	Serial
1				TDM
2		CLK	SDATA	
3		DATA		
6		SELO	SEL0	SEL0
7		SEL1	SEL1	SEL1
8				READY
10	GND	GND	GND	GND
12			+5V	+5V
13	RDP			
14	TDP			

Signal waveforms of P501, P601 and P701 (Input signal is VGA3)

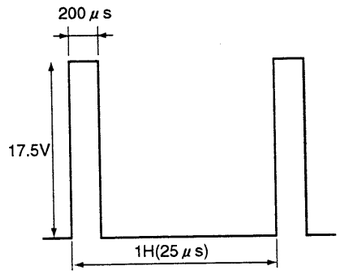
㉖,㉗ NRS1,NRS2 (Uniformity Signal)



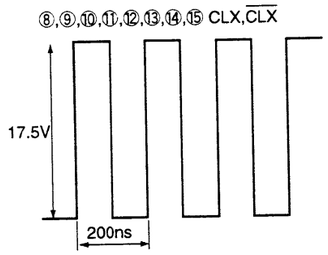
⑲,⑳,㉑,㉒,㉓,㉔ VIDEO SIGNAL



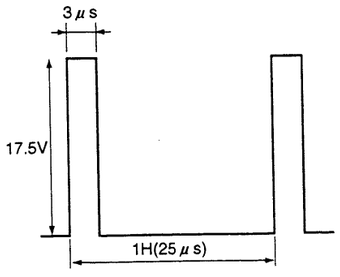
⑦⑰ DX



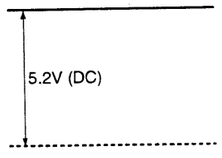
⑧,⑨,⑩,⑪,⑫,⑬,⑭,⑮ CLX,$\overline{CLX}$



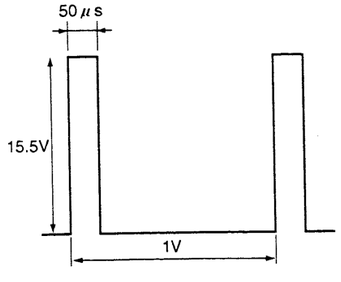
⑤ NRG



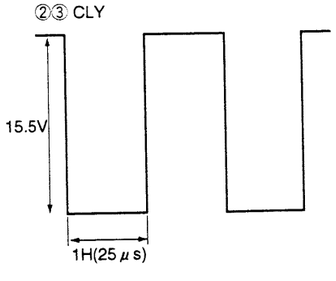
⑥㉘ LCCOM



①㉚ DY



②③ CLY

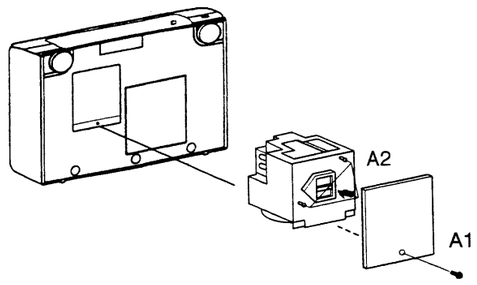


6. Service points

6 - 1 Removing the lamp

1. Loosen screw A1 and remove the lamp cover.
2. Loosen 3 screws A2 and remove the lamp.
3. After change the new lamp, reset the operating time of the lamp.

Caution : Lamp becomes too hot. To avoid burns to your finger.
Turn the power off and let the projector cool.



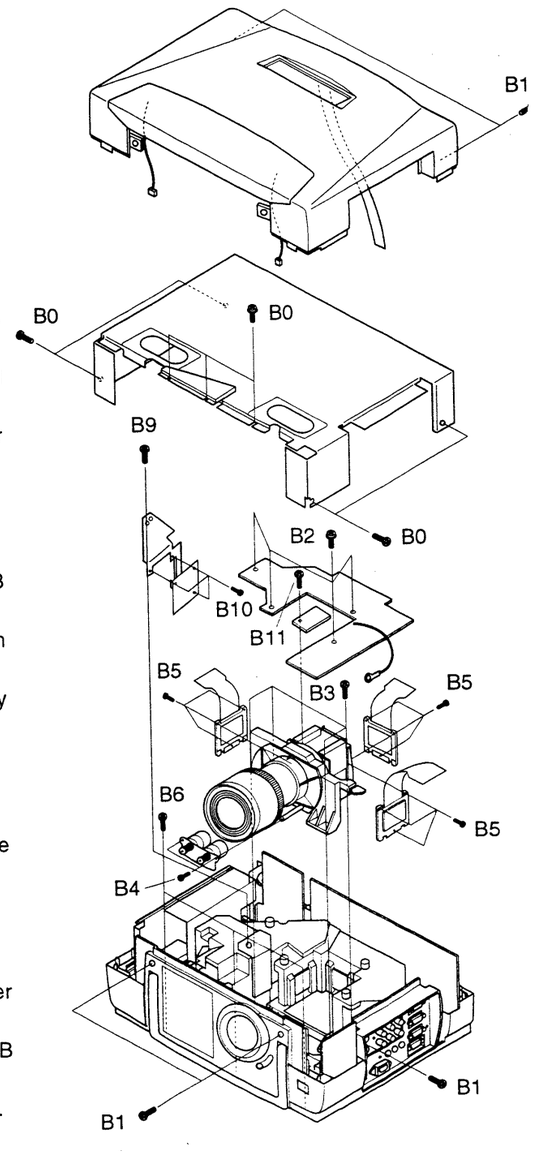
6 - 2 Removing the PWB ass'y drive, the lens prism unit, the LCD module ass'y, The front cover ass'y and exhaust fan, the handle the PWB ass'y correction color the PWB ass'y TS. (Fig. 6 - 2)

(1) Removing the PWB ass'y drive.
1. Remove 5 screws B1 and remove the upper case ass'y and disconnect the operation panel connector.
2. Remove 7 screws B0 and remove the upper shield case.
3. Disconnect 2 connector for speaker from PWB ass'y signal.
4. Release the lock of the connector housing and disconnect the FPC of the LCD module ass'y.
5. Remove 4 screws B2 and disconnect 3 connector and remove the PWB ass'y drive.

(2) Removing the lens prism unit.
1. Remove the PWB ass'y drive. (Refer to Item 6 - 2 (1).)
2. Disconnect 2 connector for motor from the PWB ass'y signal.
3. Remove 4 screws B3 and remove the lens prism unit with DC motors.
4. Remove 2 screws B4 and remove the DC motor ass'y from lens prism unit.

(3) Remove the LCD module ass'y.
1. Remove the lens prism unit with DC motor. (Refer to steps 1 and 3 of Item 6 - 2 (2).)
2. Remove 3 screws B5 and remove the LCD module ass'y.

(4) Removing the front cover ass'y and exhaust fan.
1. Remove the lens prism unit with DC motor. (Refer to steps 1 to 3 of Item 6 - 2 (2).)
2. Remove 3 screws B6 and remove the front cover ass'y (with exhaust fan).
3 Disconnect connector for exhaust fan from PWB ass'y signal.
4 Remove 4 screws B7 and remove the exhaust fan.



(5) Removing the lens shutter unit.
1. Remove the front cover ass'y.(Refer to Item 6 - 2 (4).)
2. Remove 4 screws B8 and remove the lens shutter unit.

(6) Removing the handle.
1. Remove the front cover ass'y. (Refer to Item 6 - 2 (4).)
2. Poll out the stick and remove the handle.

(7) Removing the PWB ass'y correction color.
1. Disconnect a connector from the PWB ass'y drive.
2. Remove a screw B9 and remove the PWB ass'y correction color with metal.
3. Remove 3 screws B10 and the PWB ass'y correction color.

(8) Removing the PWB ass'y TS.
1. Disconnect a connector from the PWB ass'y drive.
2. Remove a screw B11.

6 - 3 Removing Power unit, PWB ass'y signal, PWB ass'y input terminal.

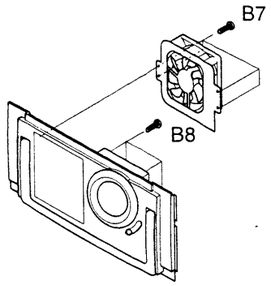
(1) Removing the Power unit (ballast).
1. Remove the upper case ass'y.
(Refer to step 1 to 2 of item 6 - 2 (1).)
2. Remove 2 screws C1 and disconnect the lamp connector.
3. Disconnect 4 connector.
4. Remove 4 screws C2 and remove the power unit holder ass'y.

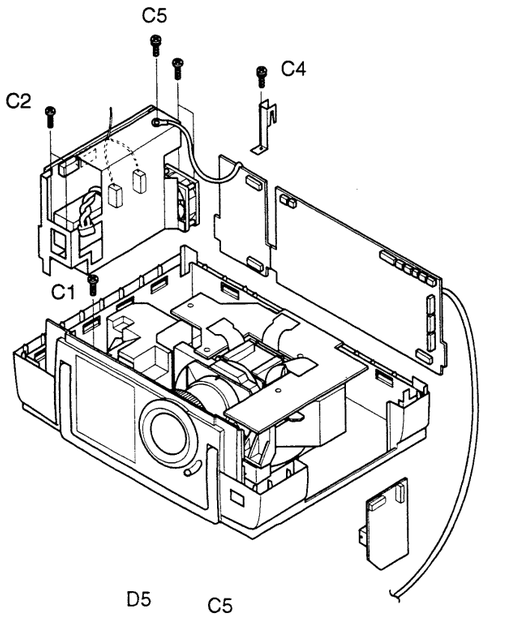
(2) Removing the power unit (circuit).
1. Remove the upper case ass'y.
(Refer to step 1 to 2 of item 6 - 2 (1).)
2. Remove 1 screws C4 and remove the holder metal .
3. Remove screw C5 and remove the ground connection wire.
4. Disconnect 2 connector and remove the power unit (circuit).

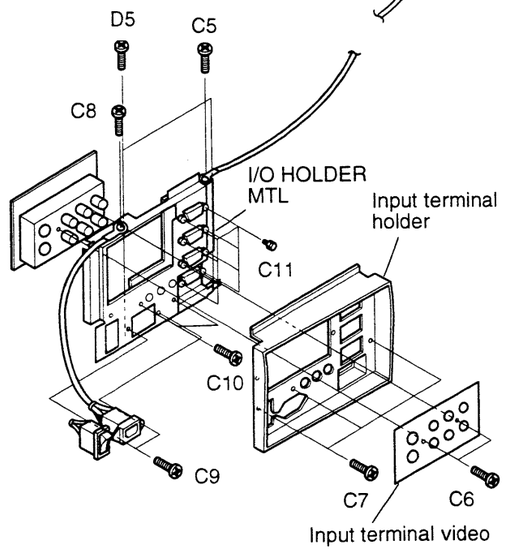
(3) Removing the PWB ass'y filter.
1. Remove the upper case ass'y.
(Refer to steps 1 to 2 of item 6 - 2 (1).)
2. Disconnect 2 connector and remove the PWB ass'y filter.

(4) Removing the PWB ass'y signal.
1. Remove the PWB ass'y drive.
(Refer to step 1 to 2 item 6 - 2 (1).)
2. Disconnect all 8 connector of PWB ass'y signal.
3. Remove screw C4 and remove the holder metal.
4. Remove screw C5 and remove the ground connection wire and remove the PWB ass'y signal.

(5) Removing the PWB ass'y input terminal video.
1. Remove the upper case ass'y.
(Refer to step 1 to 2 item 6 - 2 (1).)
2. Remove 2 screws C6 and remove the connector and remove the PWB ass'y input terminal video.







(6) Removing the PWB ass'y input terminal RGB.
1. Remove the PWB ass'y signal.
(Refer to item 6 - 3 (4).)
2. Remove the PWB ass'y input terminal video.
(Refer to item 6 - 3 (5).)
3. Remove 3 screws C7 and remove I/O terminal holder.
4. Remove screw C8 and remove the ground connection wire from AC inlet.
5. Remove 2 screws C9 and remove the AC inlet holder.
6. Remove 2 screws D5 and remove I/O HOLDER MTL.
7. Remove 8 screws C11 and 2 screws C10 remove the PWB ass'y input terminal RGB.

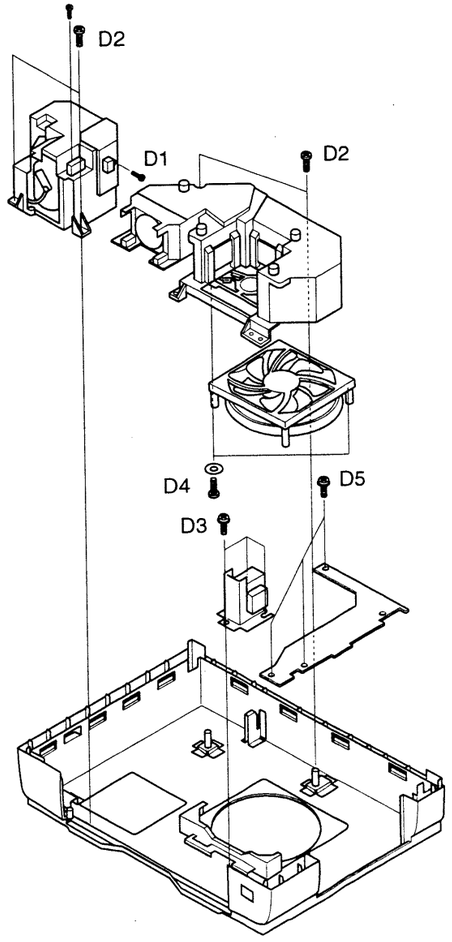
6 - 4 Removing the dichroic optics unit, intake fan, PWB ass'y mother.

(1) Removing the dichroic optics unit.
1. Remove the lens prism unit.
(Refer to step 1 to 3 of item 6 - 2 (2).)
2. Remove screw D1 and remove the micro switch and thermal sensor switch.
3. Remove 4 screws D2 and remove the dichroic optics unit.

(2) Removing the choke trans.
1. Remove the PWB ass'y drive.
(Refer to item 6 - 2 (1).)
2. Disconnect 1 connector.
3. Remove 3 screws D3 and remove the choke trans.

(3) Removing the intake fan.
1. Remove the dichroic optics unit.
(Refer to item 6 - 4 (1).)
2. Disconnect connector from the PWB ass'y signal.
3. Remove 4 screws D4 and remove the intake fan.

(4) Removing the PWB ass'y mother.
1. Remove the power unit (filter).
(Refer to item 6 - 3 (3).)
2. Remove the PWB ass'y signal.
(Refer to item 6 - 3 (4).)
3. Remove the PWB ass'y input terminal video.
(Refer to item 6 - 3 (5).)
4. Remove the PWB ass'y input terminal RGB.
(Refer to item 6 - 3 (6).)
5. Remove 3 screws D5 and remove the PWB ass'y mother.



7. Dust cleaning

(1) Check dust condition

1. Show the white picture on the screen (whose size is 60") to check dust condition.
2. If dust condition is not good, should be clean the LCD module ass'y and the Air filter.

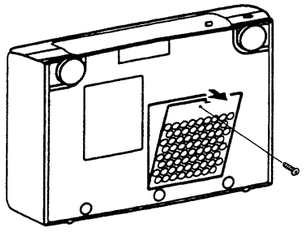
(2) Clean the LCD module ass'y

1. Remove the LCD module ass'y. (Refer Item 6 - 2 (3)).
2. Blow the air on both side of the LCD module by dust blower or air gun.
3. If dusts are still on, wipe it with the special glass cleaning cloth.
4. Fix the LCD module, and check dust condition.
5. If it is OK, adjust convergence. (see 4 - 3)

(3) Clean the air filter

1. Remove the air filter from the bottom of the projector. (see Fig.7 - 1)
2. Wipe the air filter with a cloth moistened with water or neutral detergent, and wipe with a dry cloth.

(1) Remove 1 screws.



(2) Remove the air filter.

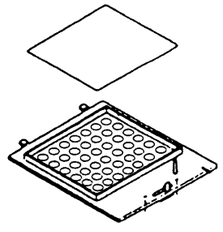
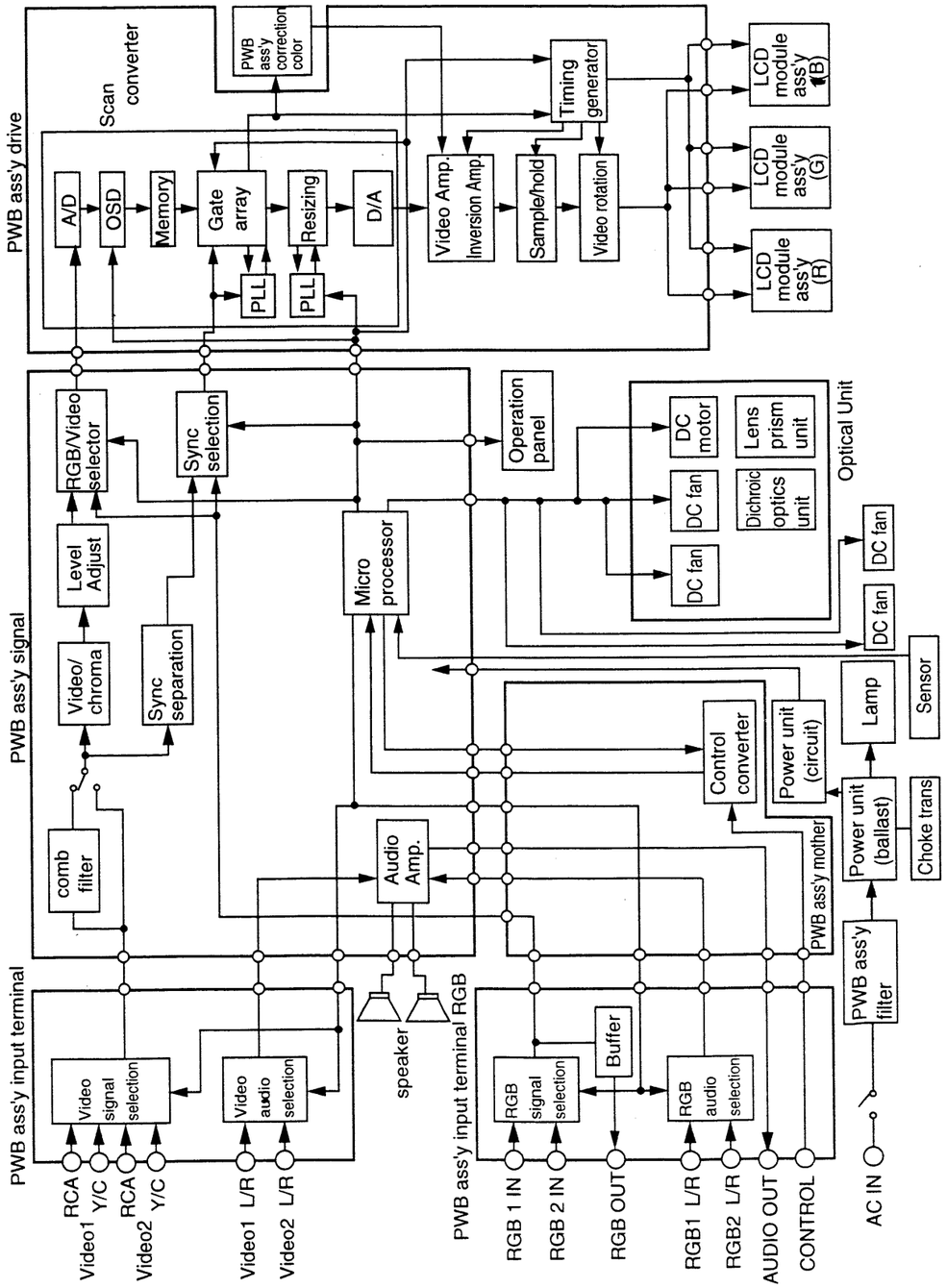


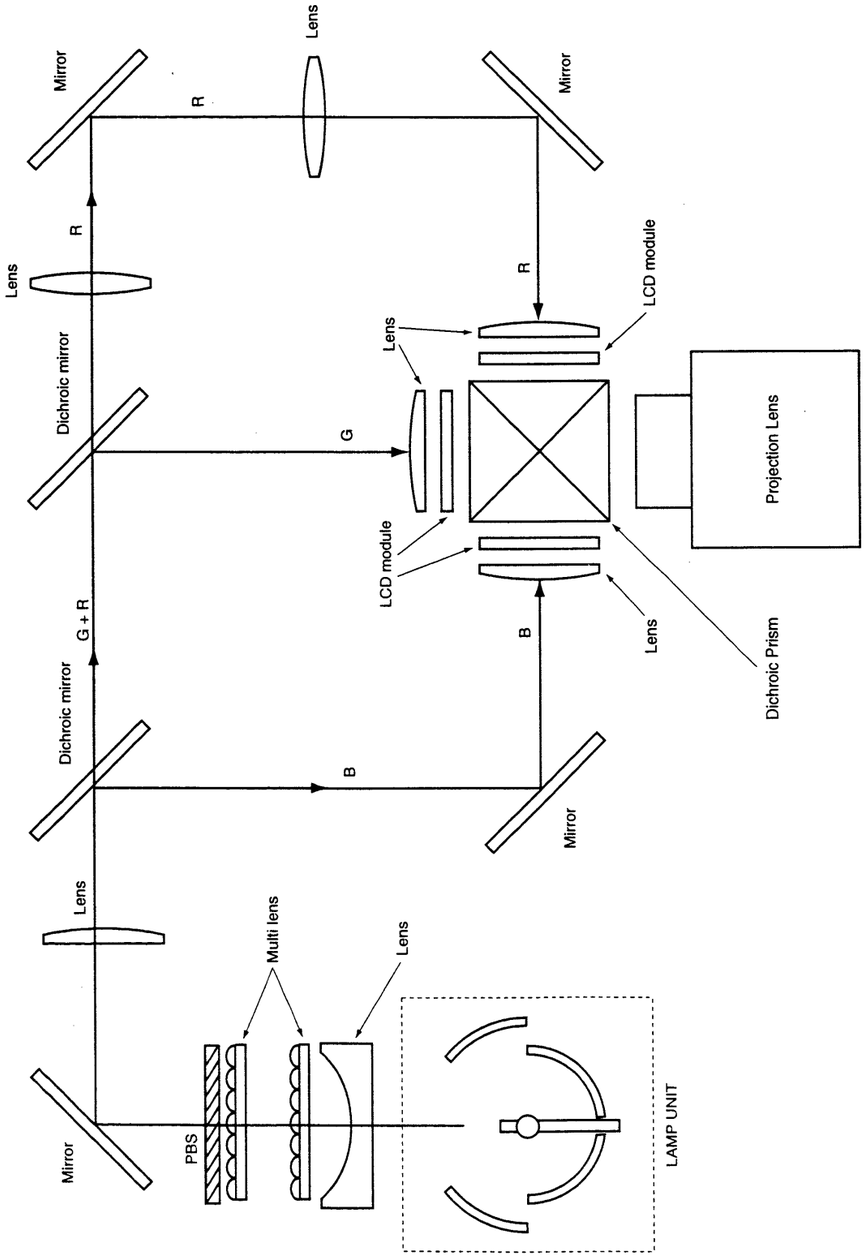
Fig.7 - 1

8. Block diagram

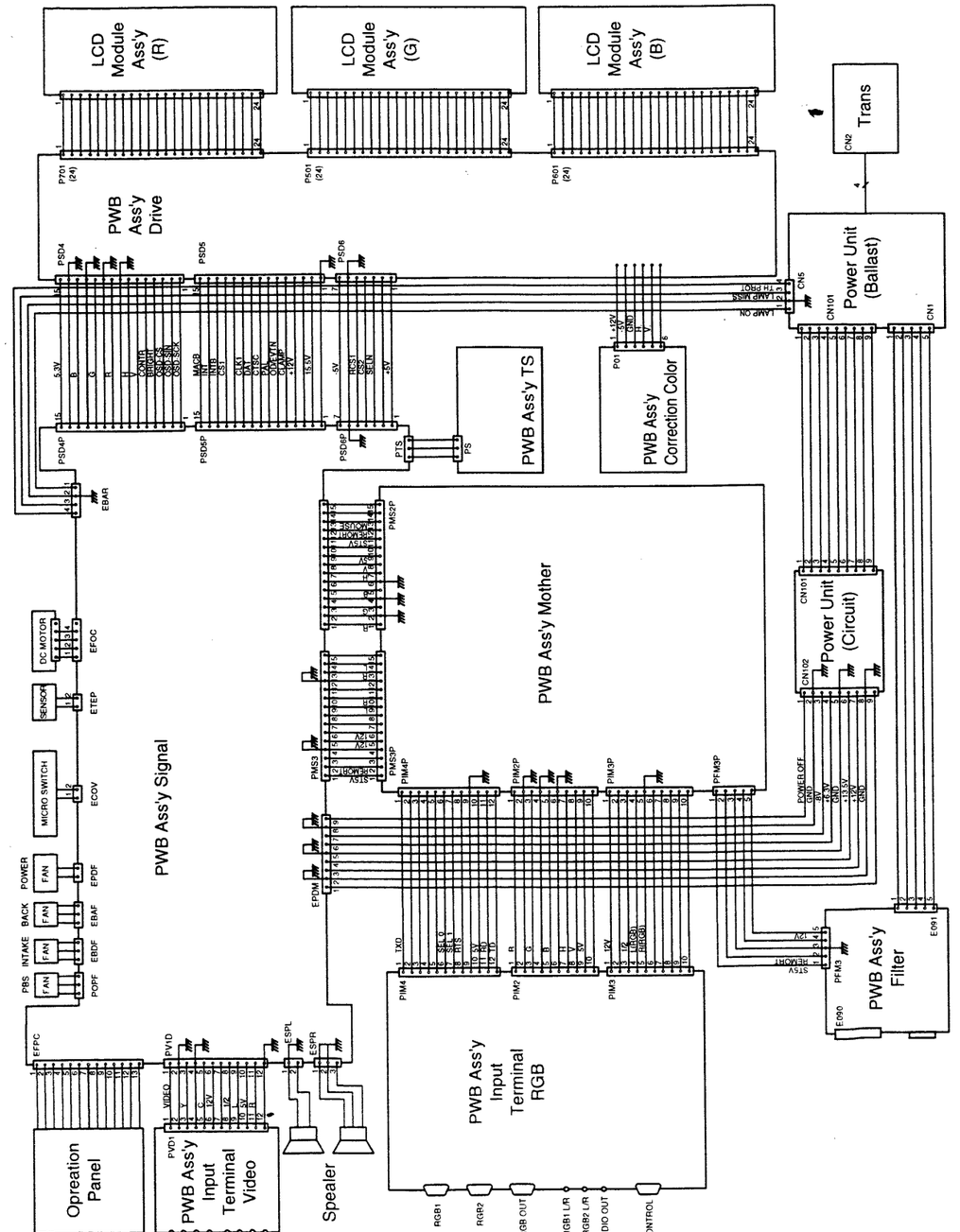
8.1 Circuit diagram



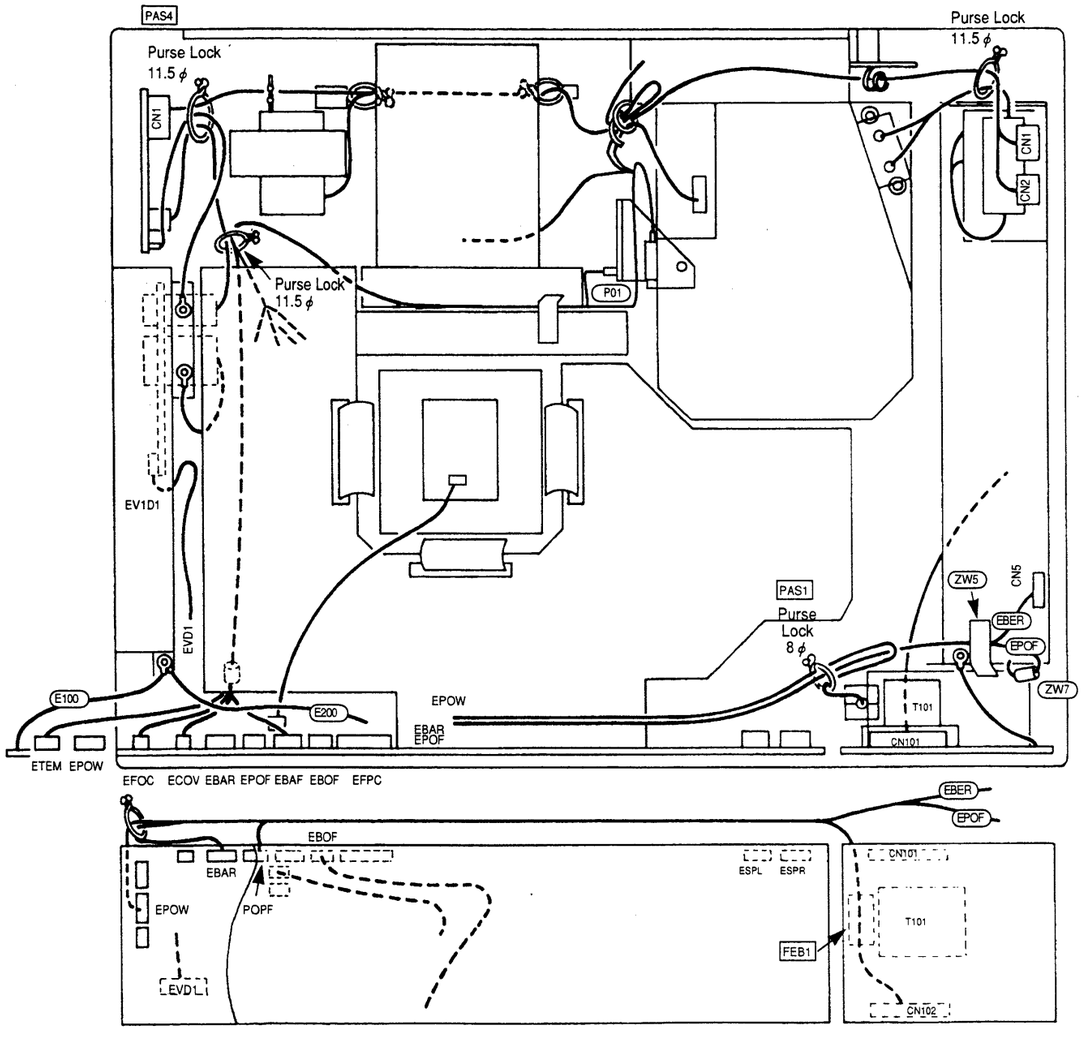
8.2 Layout of optical system



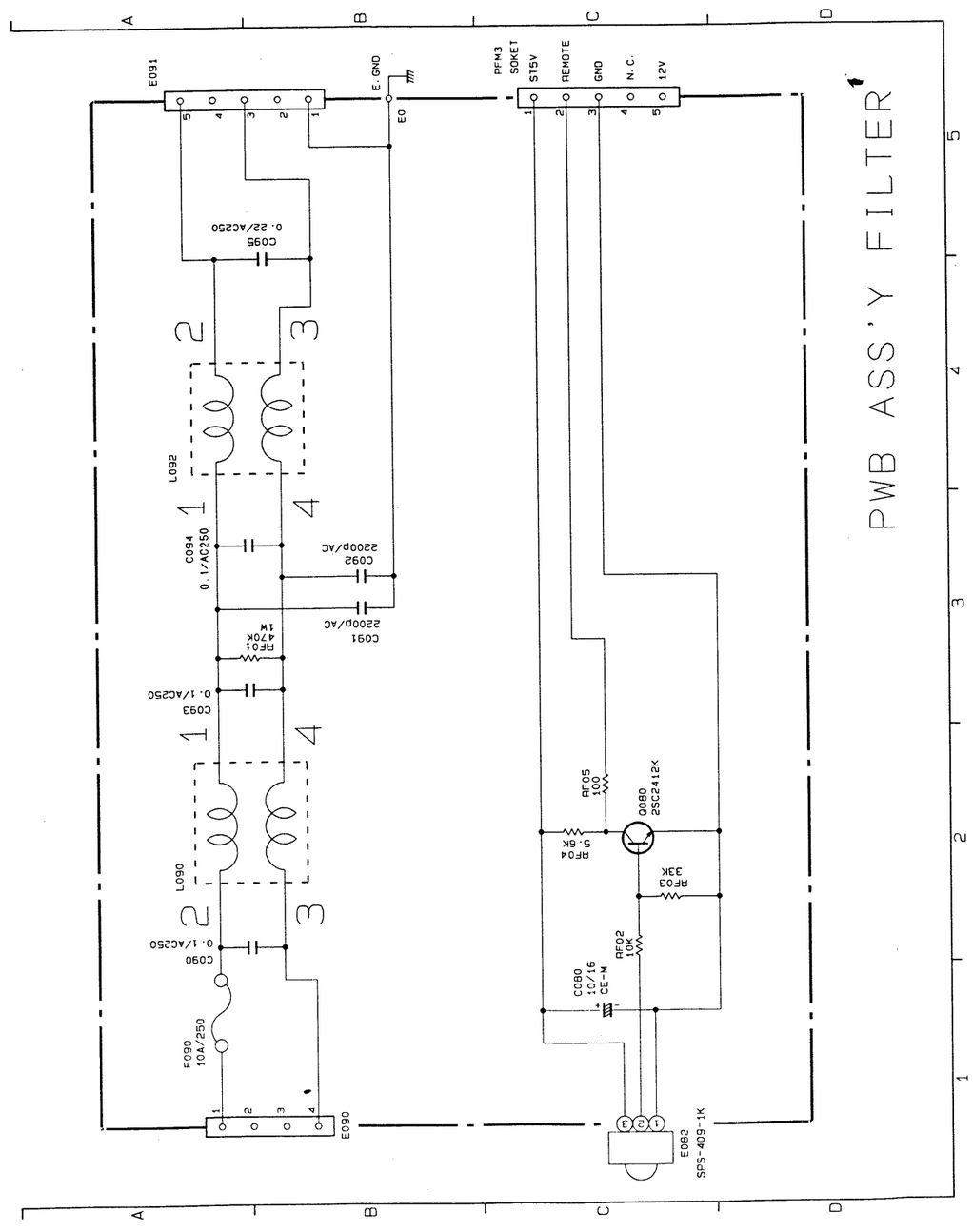
9. Connector connection diagram



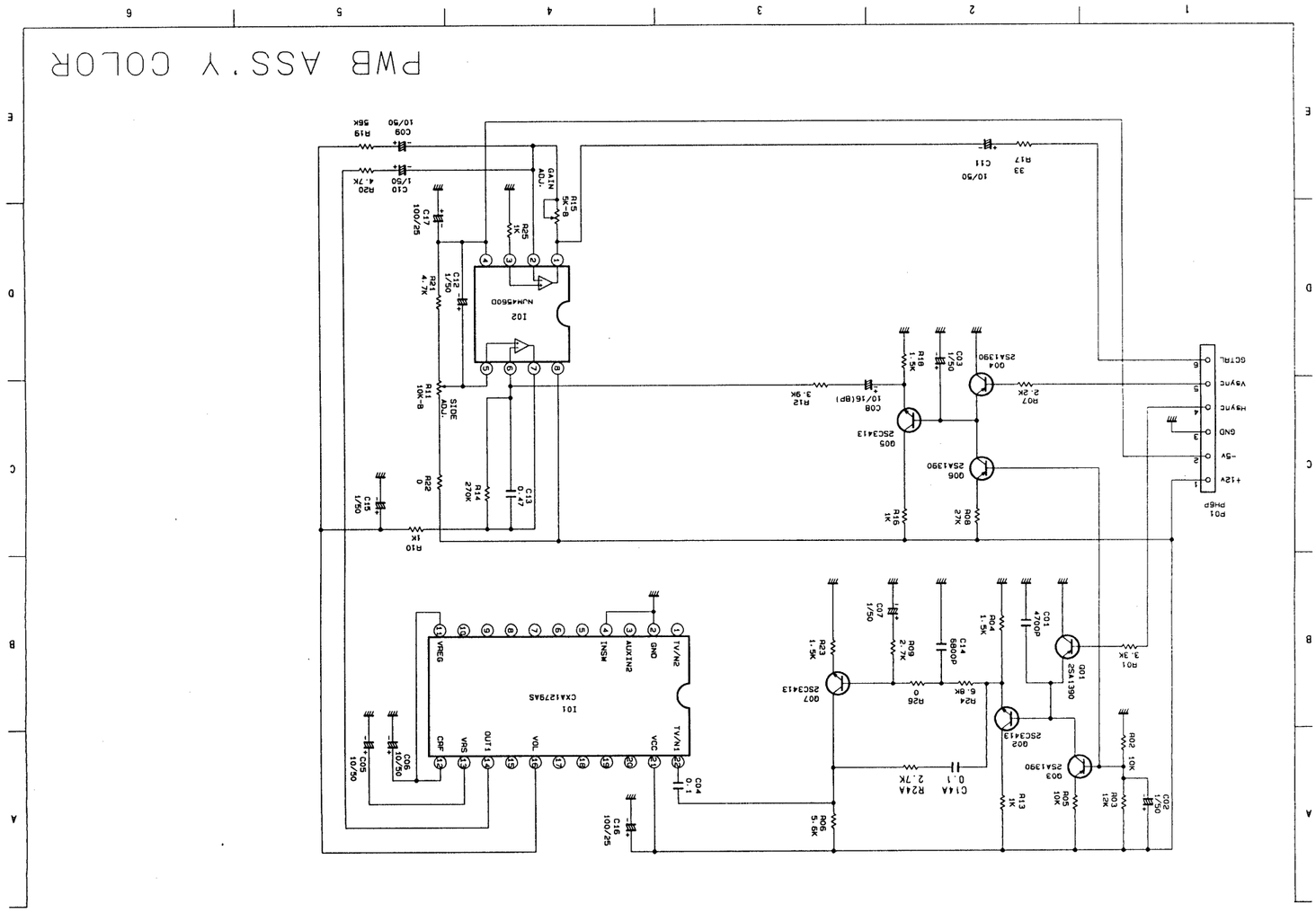
10. Wiring diagram



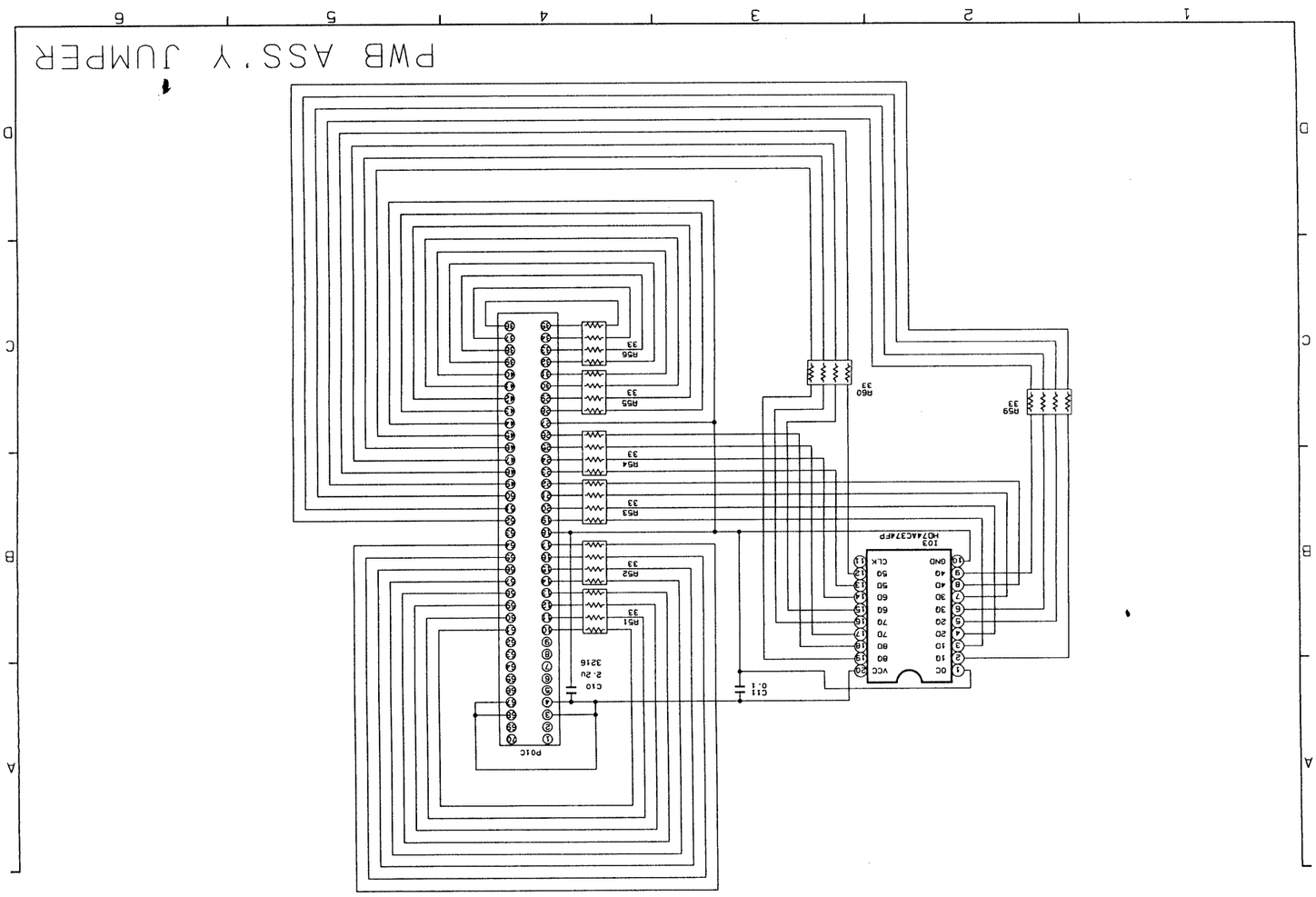
11. Basic circuit diagram

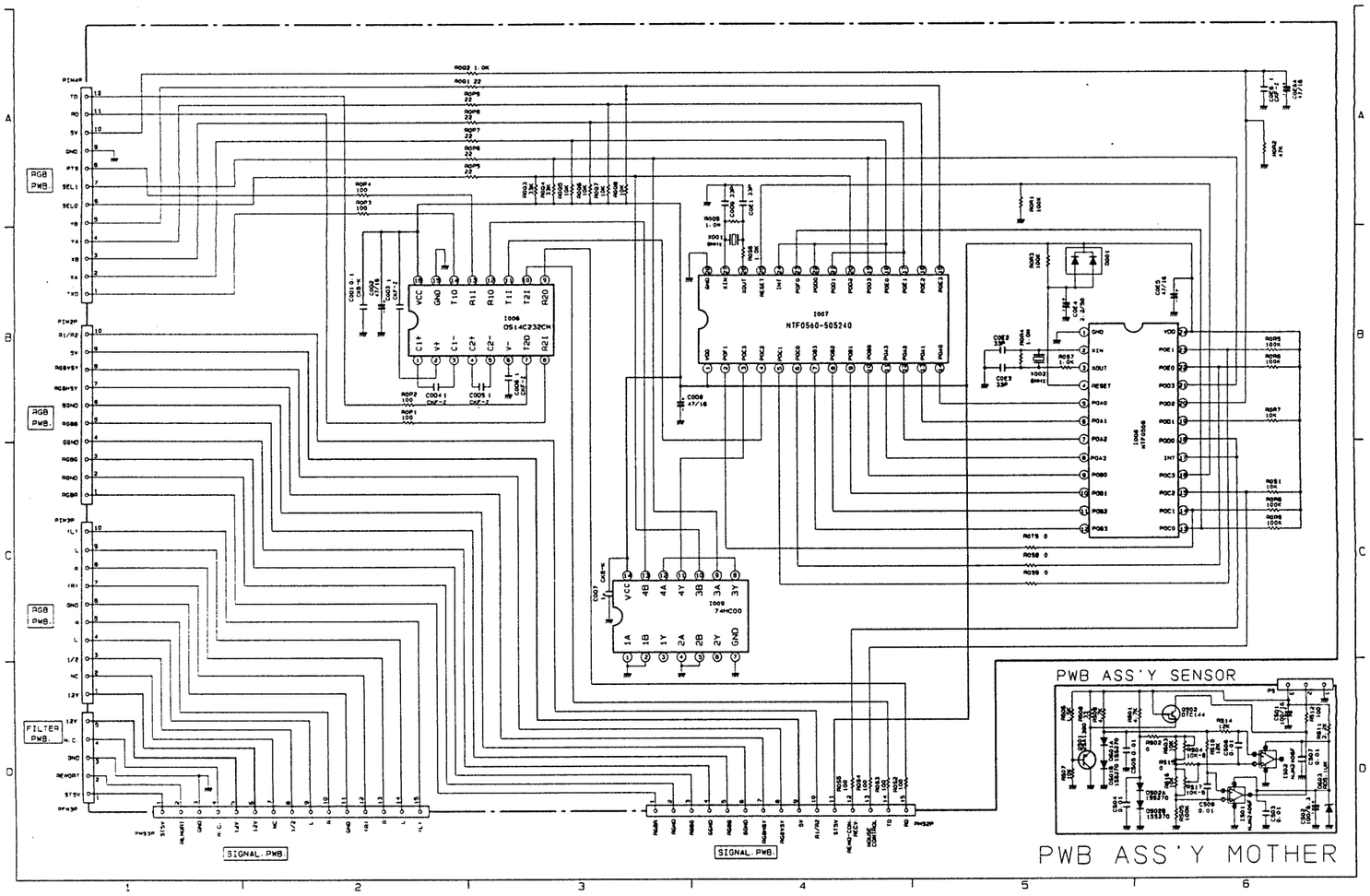


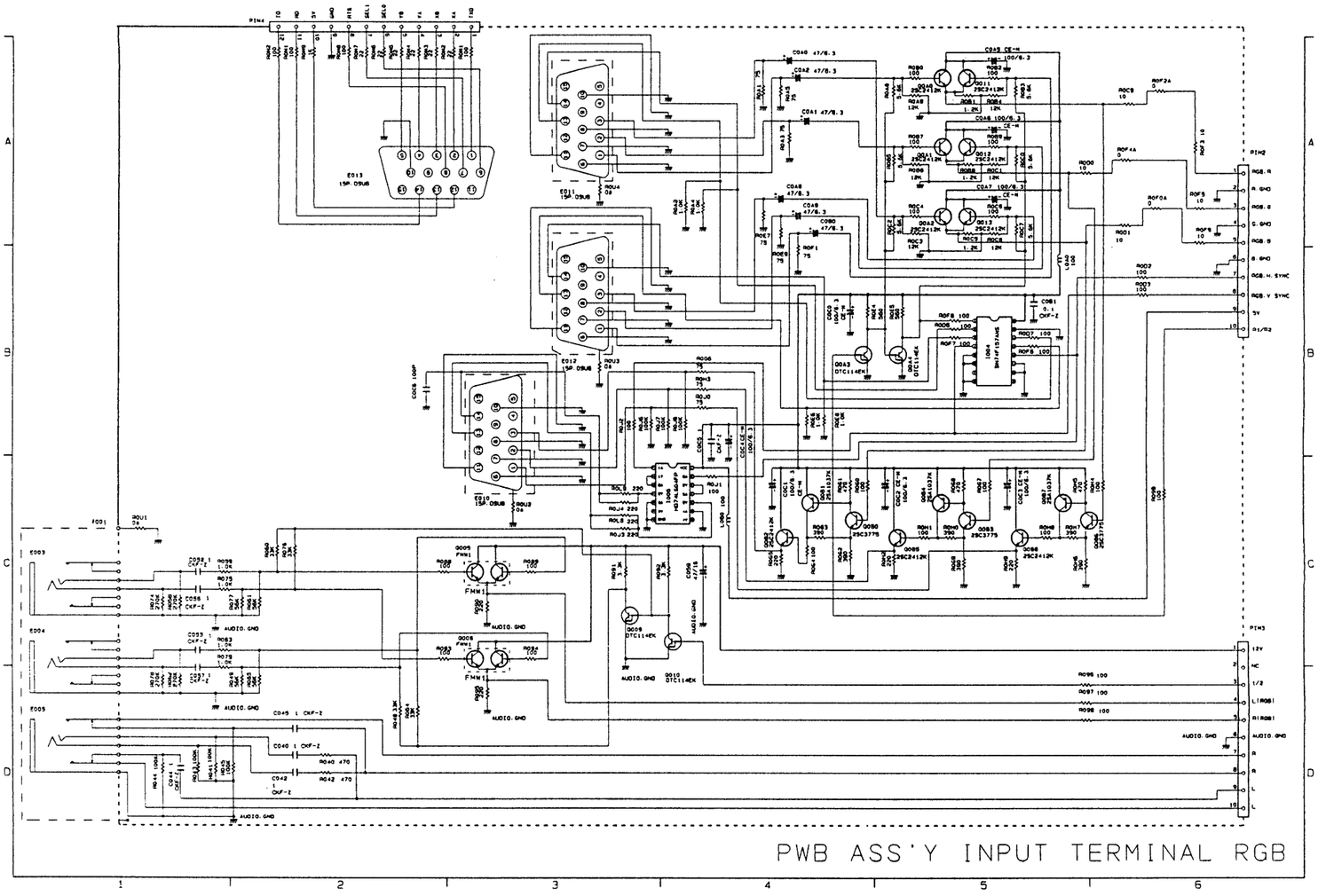
PWB ASS'Y COLOR



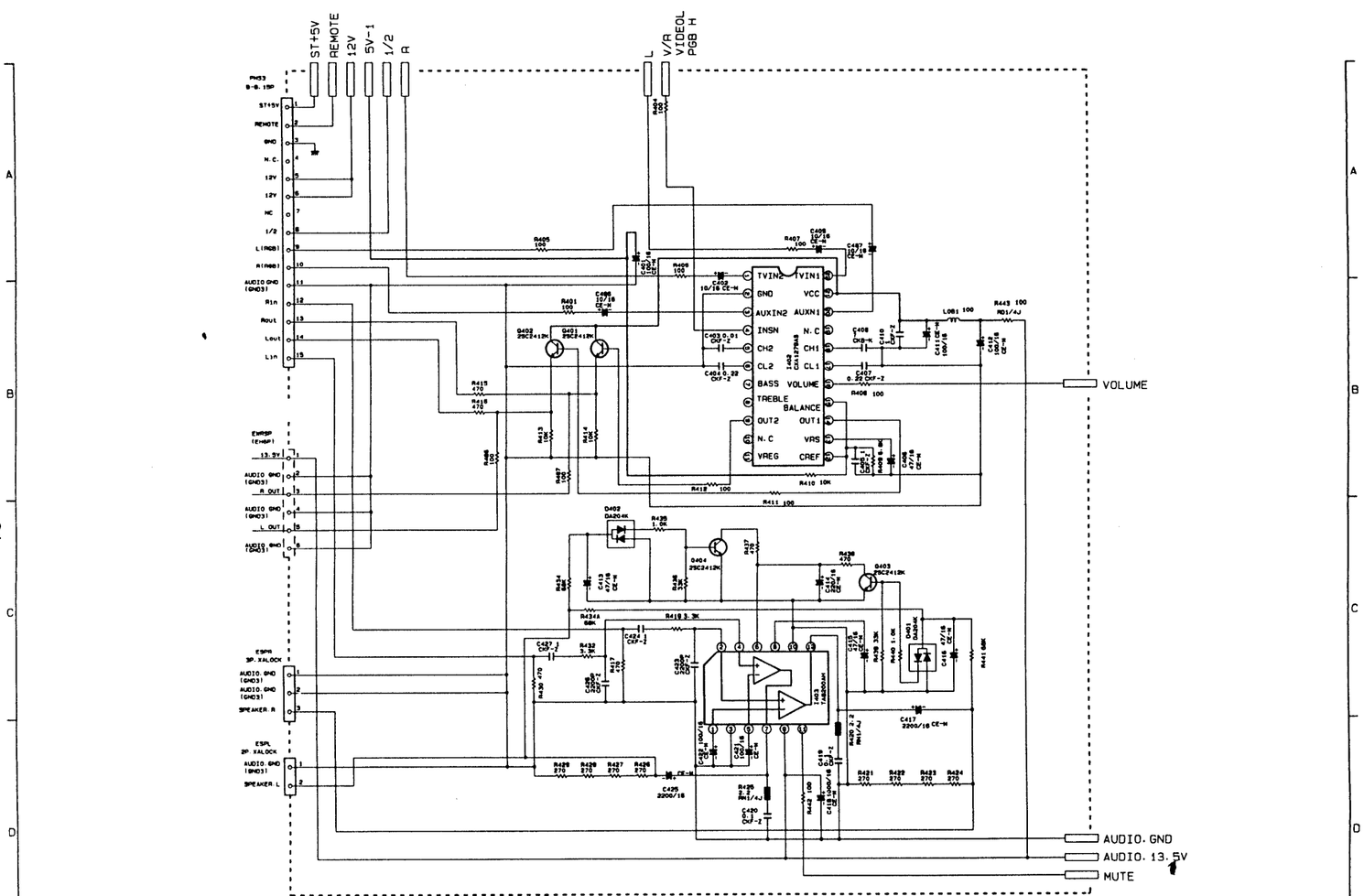
PWB ASS'Y JUMPER




PWB ASS'Y SENSOR
PWB ASS'Y MOTHER
SIGNAL. PWB.
SIGNAL. PWB.
RGB PWB.
RGB PWB.
RGB PWB.
FILTER PWB.
I007 NTF0560-505240
I006 OS14C232CM
I008 74HC00
Q001 2SC2412K
Q002 2SC2412K
Q003 FMW1
Q004 FMW1
Q007 DTC114EK
Q008 DTC114EK
Q009 DTC144
I001 MM1118XF
I002 MC4053
PVD1 12PPH
VIDEO
VIDEO. GND
Y. SIGNAL
Y. SIGNAL GND
C. SIGNAL
12V
S. SELECT
1/2
L
5V
R
AUDIO. GND
VIDEO1
VIDEO2
L1
R1
L2
R2
V1
V2
AUDIO. GND

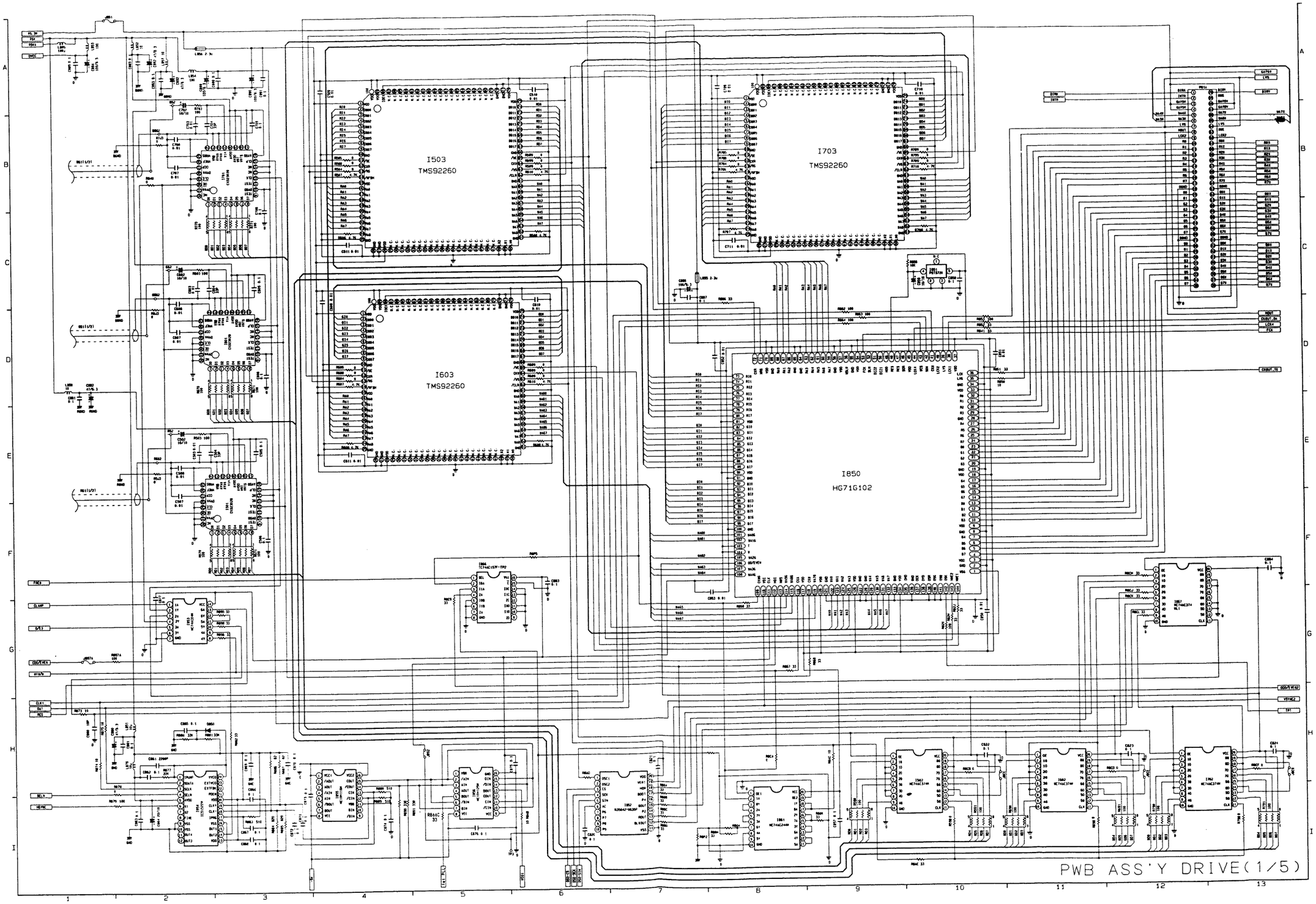


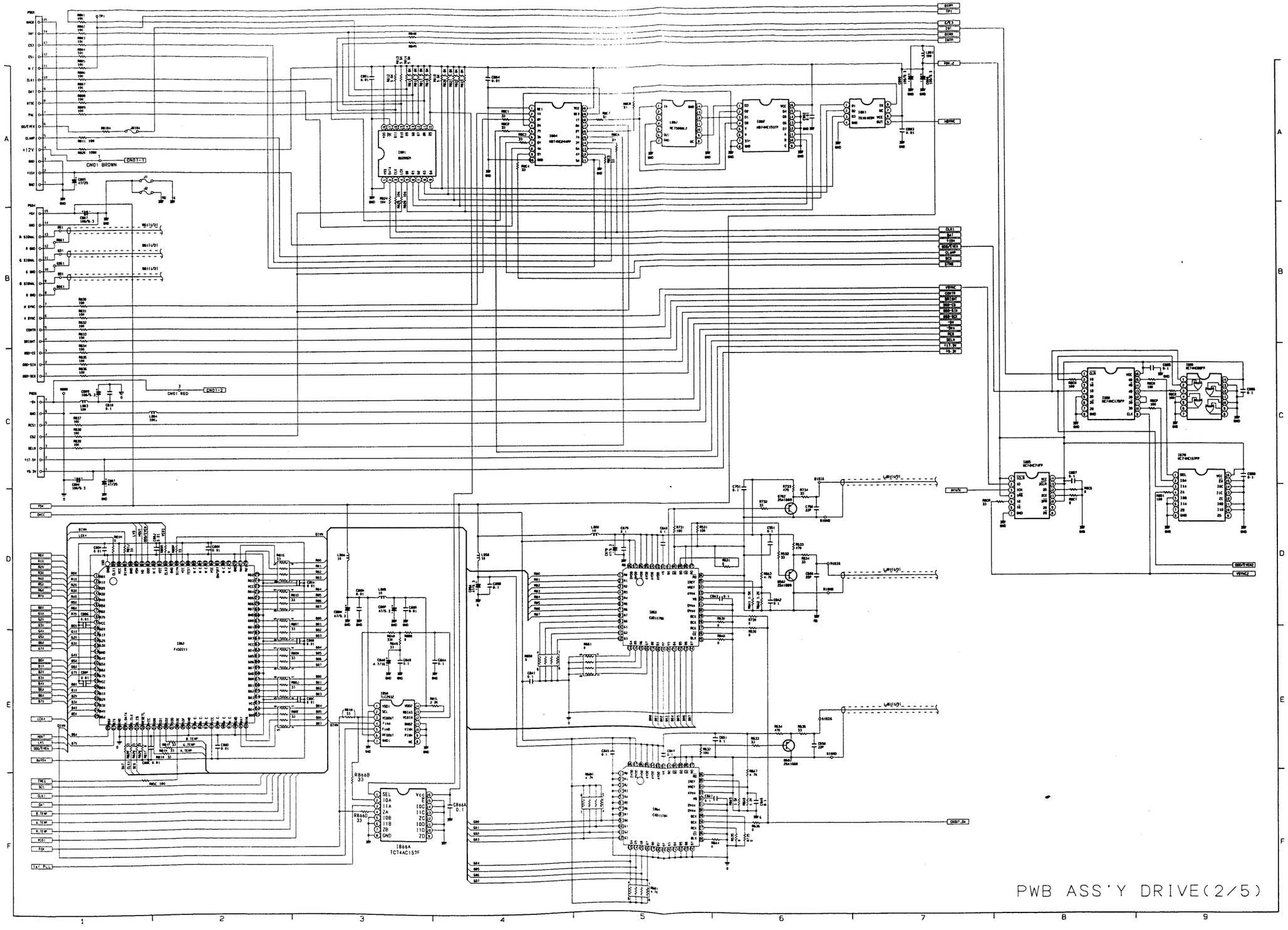
PWB ASS'Y INPUT TERMINAL RGB

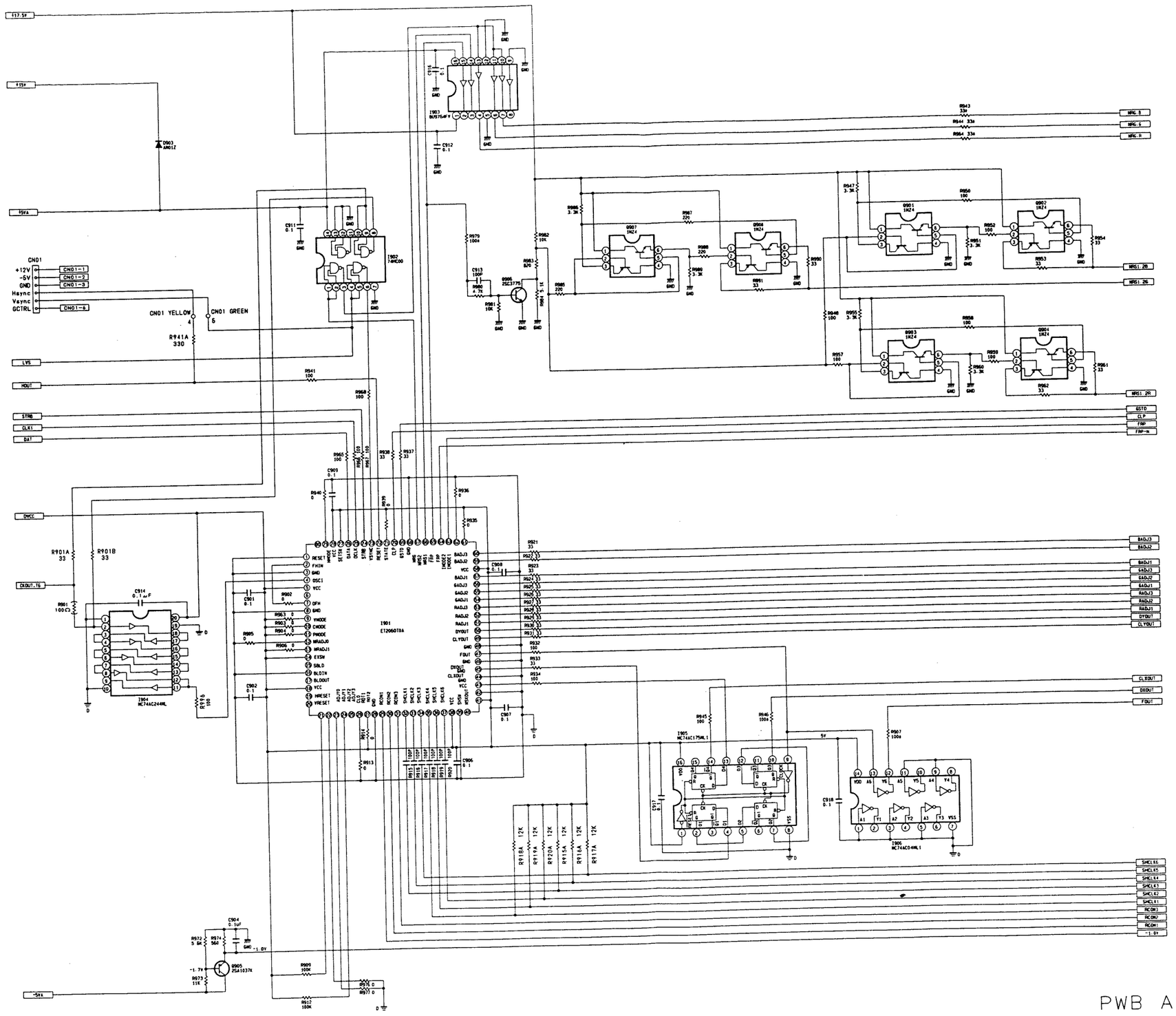


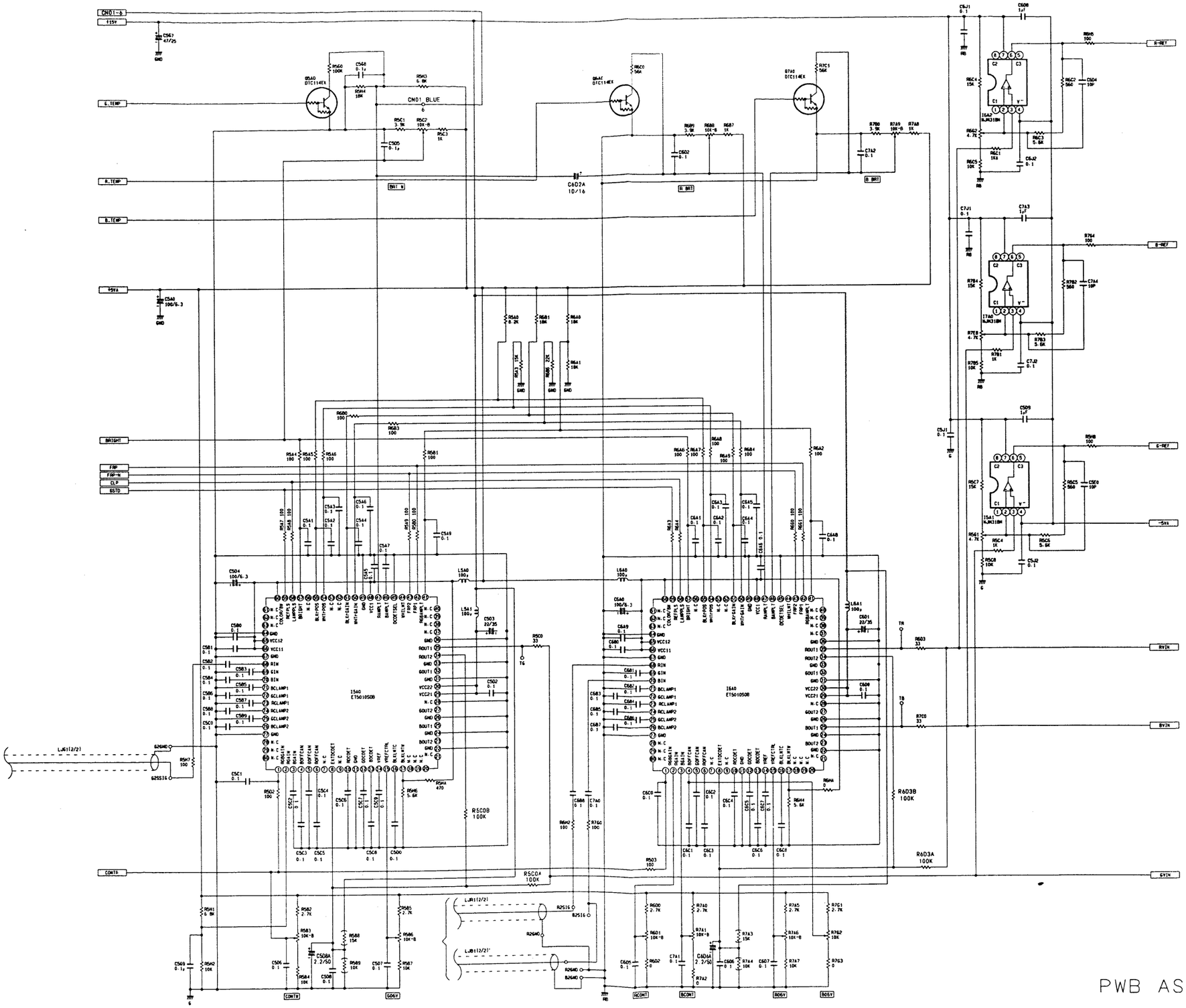
PWB ASS'Y SIGNAL(4/4)

MEMO


I503
TMS92260
I603
TMS92260
I703
TMS92260
I850
HG71G102
PWB ASS'Y DRIVE(1/5)

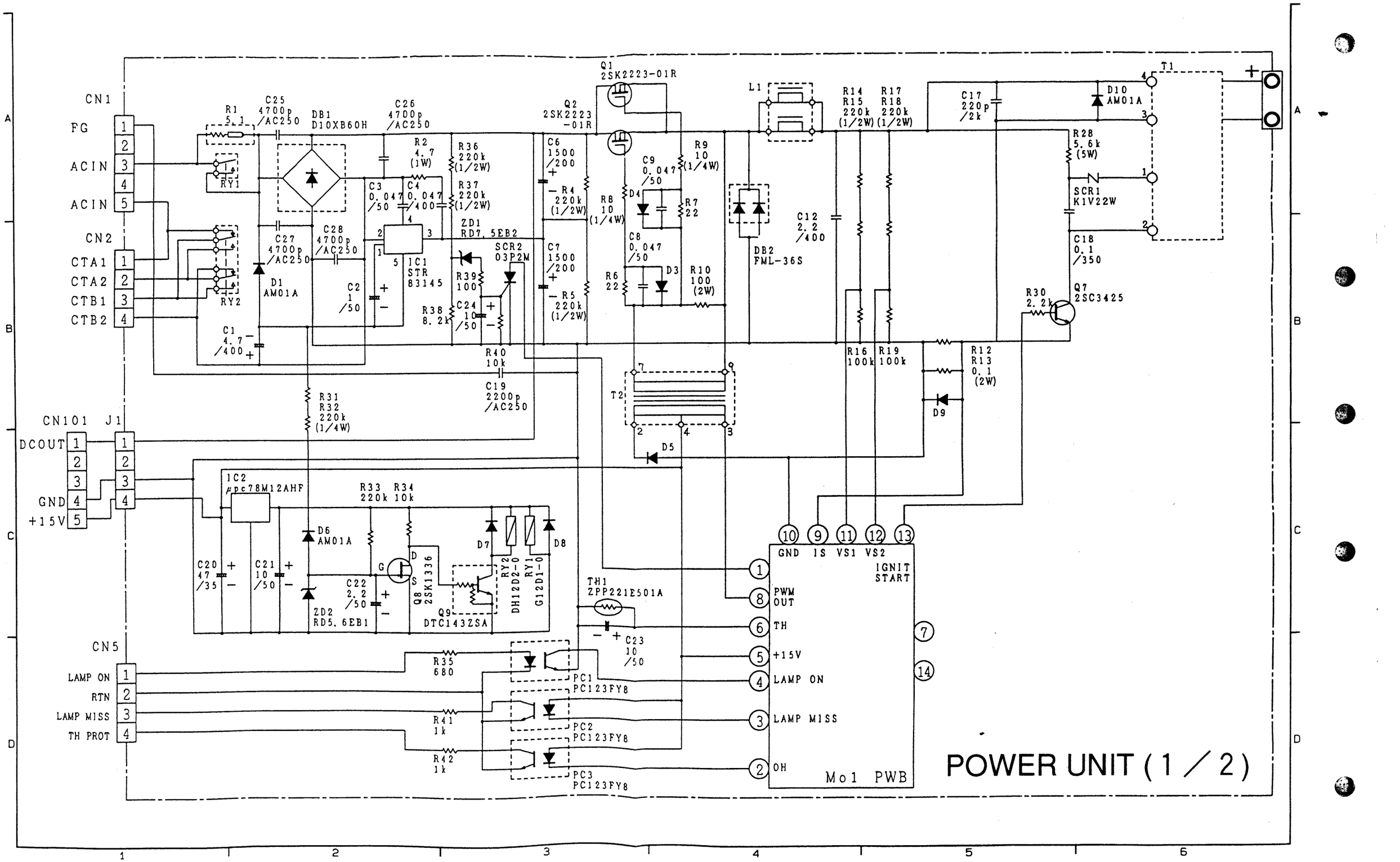

CN01-1
CN01 BROWN
CN01-2
CN01 RED
PWB ASS'Y DRIVE(2/5)

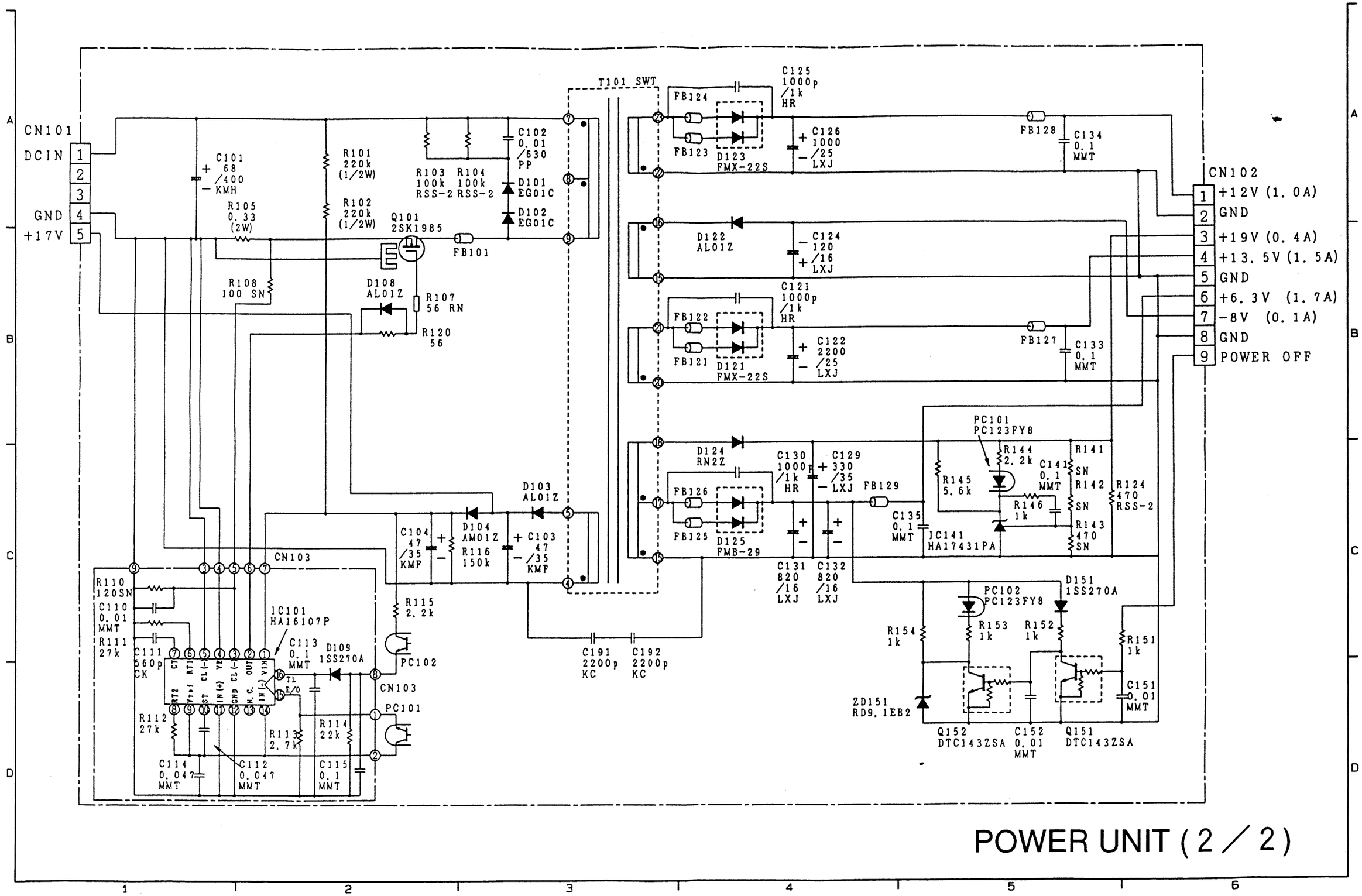

+17.5V
+15V
D903 AM01Z
15Va
CN01
+12V
-5V
GND
Hsync
Vsync
GCTRL
CN01-1
CN01-2
CN01-3
CN01-6
CN01 YELLOW 4
CN01 GREEN 5
R941A 330
LVS
HOUT
STRB
CLK1
DAT
DVCC
DXOUT.TG
R901A 33
R901B 33
C914 0.1μF
R901 100Ω
1904 MC74AC244ML
R916 100
C911 0.1
1902 74HC00
C912 0.1
1903 BA5795-W Y
R979 100K
R982 10K
C913 1000P
R983 820
R985 220
R984 5.1K
R981 33
Q905 2SC3775
R941 100
R968 100
R965 100
R966 100
R967 100
R938 33
R937 33
C909 0.1
R940 0
R936 0
R935 0
R943 33
R944 33
R954 33
MPC.B
MPC.G
MPC.R
R947 3.3K
R950 100
R951 3.3K
R952 100
R953 33
Q901 1IN24
Q902 1IN24
Q907 1IN24
Q904 1IN24
R987 220
R988 220
R989 3.3K
R990 33
R991 33
MPS1.2B
MPS1.2G
R948 100
R955 3.3K
R956 100
R957 100
R958 100
R959 100
R960 3.3K
R961 33
R962 33
Q903 1IN24
Q906 1IN24
MPS1.2R
RSTO
CLP
FRP
FRP-N
R901 100Ω
C914 0.1μF
1904 MC74AC244ML
R916 0
R913 0
C901 0.1
R902 0
R903 0
R904 0
R905 0
R906 0
C902 0.1
1901 E1206OTBA
C908 0.1
C907 0.1
C906 0.1
R921 33
R923 33
R924 33
R925 33
R926 33
R927 33
R928 33
R929 33
R930 33
R931 33
R932 100
R933 33
R934 33
BADJ3
BADJ2
BADJ1
GADJ3
GADJ2
GADJ1
RADJ3
RADJ2
RADJ1
DYOUT
CLYOUT
CL.XOUT
DXOUT
FOUT
R845 100
R846 100Ω
1905 MC74AC175ML1
R907 100Ω
5V
C917 0.1
C918 0.1
1906 MC74AC04ML1
R918A 12K
R919A 12K
R920A 12K
R915A 12K
R916A 12K
R917A 12K
SHCLK6
SHCLK5
SHCLK4
SHCLK3
SHCLK2
SHCLK1
RCOM3
RCOM2
RCOM1
-1.0V
C904 0.1uF
R972 5.6K
R974 560
R973 11K
Q905 2SA1037K
-1.7V
-5Va
R909 100K
R912 100K
R976 0
R977 0
PWB ASS'Y DRIVE(3/5)



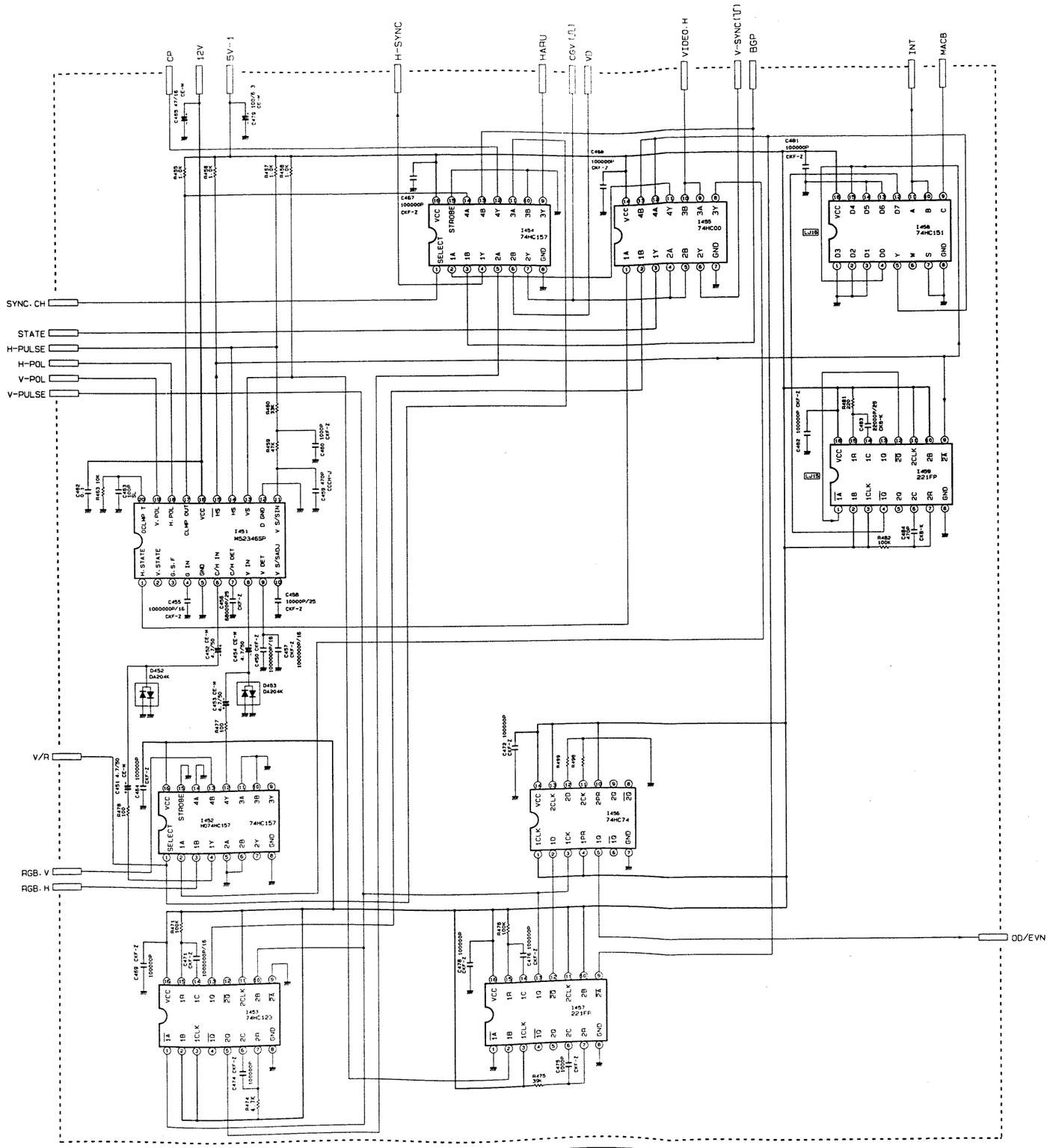
PWB ASS'Y DRIVE(4/5)

PWB ASS'Y DRIVE(5/5)

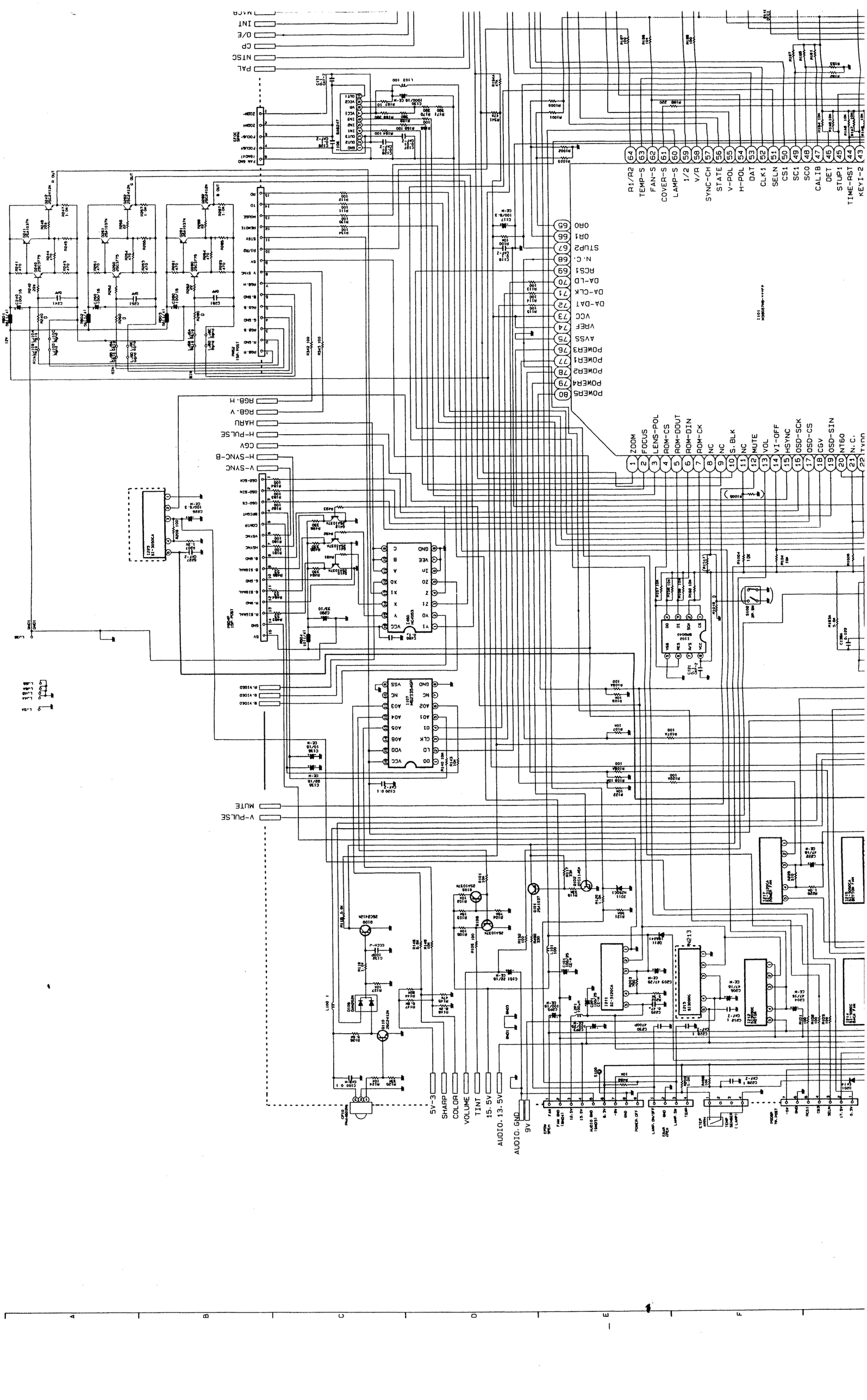

CN1
FG 1
ACIN 3
ACIN 4
ACIN 5
CN2
CTA1 1
CTA2 2
CTB1 3
CTB2 4
R1 5.1
C25 4700p /AC250
DB1 D10XB60H
C26 4700p /AC250
R2 4.7 (1W)
C3 0.047 /50
C4 0.047 /400
R36 220k (1/2W)
R37 220k (1/2W)
RY1
RY2
C27 4700p /AC250
C28 4700p /AC250
D1 AM01A
C2 1 /50
IC1 STR 83145
ZD1 RD7.5EB2
SCR2 03P2M
R39 100
R38 8.2k
C24 10 /50
C1 4.7 /400
R40 10k
C19 2200p /AC250
R31 R32 220k (1/4W)
Q1 2SK2223-01R
Q2 2SK2223 -01R
C6 1500 /200
R4 220k (1/2W)
C7 1500 /200
R5 220k (1/2W)
R8 10 (1/4W)
C9 0.047 /50
D4
R7 22
C8 0.047 /50
D3
R6 22
R9 10 (1/4W)
R10 100 (2W)
L1
DB2 FML-36S
C12 2.2 /400
R14 R15 220k (1/2W)
R17 R18 220k (1/2W)
R16 100k
R19 100k
C17 220p /2k
D10 AM01A
T1
R28 5.6k (5W)
SCR1 K1V22W
C18 0.1 /350
R30 2.2k
Q7 2SC3425
R12 R13 0.1 (2W)
D9
T2
D5
CN101 J1
DCOUT 1
2
3
GND 4
+15V 5
IC2 μpc78M12AHF
R33 220k
R34 10k
D6 AM01A
C20 47 /35
C21 10 /50
C22 2.2 /50
ZD2 RD5.6EB1
Q8 2SK1336
Q9 DTC143ZSA
D7
D8
RY2 DH12D2-0
RY1 G12D1-0
TH1 ZPP221E501A
C23 10 /50
CN5
LAMP ON 1
RTN 2
LAMP MISS 3
TH PROT 4
R35 680
R41 1k
R42 1k
PC1 PC123FY8
PC2 PC123FY8
PC3 PC123FY8
10 GND
9 IS
11 VS1
12 VS2
13 IGNIT START
1
8 PWM OUT
6 TH
5 +15V
4 LAMP ON
3 LAMP MISS
2 OH
7
14
Mo1 PWB
POWER UNIT (1 / 2)

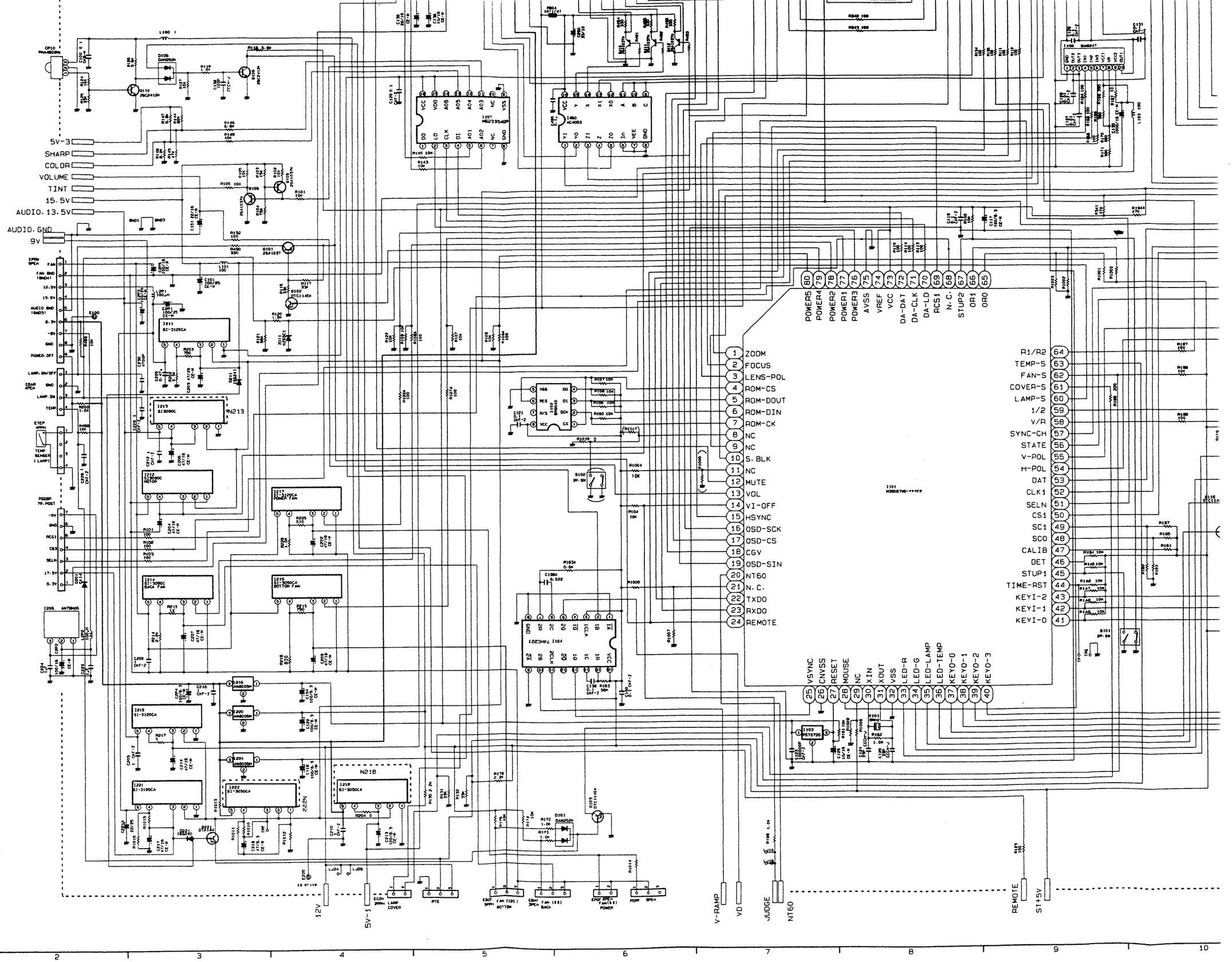


POWER UNIT (2 / 2)



PWB ASS'Y SIGNAL(3/4)


PAL
NTSC
CP
O/E
INT
MACB
R1/R2
TEMP-S
FAN-S
COVER-S
LAMP-S
1/2
V/R
SYNC-CH
STATE
V-POL
H-POL
DAT
CLK1
SELN
CS1
SC1
SCO
CALIB
DET
STUP1
TIME-RST
KEYI-2
ZOOM
FOCUS
LENS-POL
ROM-CS
ROM-DOUT
ROM-DIN
ROM-CK
NC
NC
S. BLK
NC
MUTE
VOL
VI-OFF
HSYNC
OSD-SCK
OSD-CS
CGV
OSD-SIN
NTSC
N.C.
OR0
OR1
STUP2
N. C.
RCS1
DA-LD
DA-CLK
DA-DAT
VCC
VREF
AVSS
POWER3
POWER1
POWER2
POWER4
POWER5
RGB. H
RGB. V
HABU
H-PULSE
CGV
H-SYNC-B
V-SYNC
MUTE
V-PULSE
5V-3
SHARP
COLOR
VOLUME
TINT
15.5V
AUDIO. 13.5V
AUDIO. GND
9V


5V-3
SHARP
COLOR
VOLUME
TINT
15.5V
AUDIO.13.5V
AUDIO.GND
9V
POWER5
POWER4
POWER2
POWER1
POWER3
AVSS
VREF
VCC
DA-DAT
DA-CLK
DA-LD
PCS1
N.C.
STUP2
OR1
OR0
1 ZOOM
2 FOCUS
3 LENS-POL
4 ROM-CS
5 ROM-DOUT
6 ROM-DIN
7 ROM-CK
8 NC
9 NC
10 S.BLK
11 NC
12 MUTE
13 VOL
14 VI-OFF
15 HSYNC
16 OSD-SCK
17 OSD-CS
18 CGV
19 OSD-SIN
20 NT60
21 N.C.
22 TXDO
23 RXDO
24 REMOTE
64 R1/R2
63 TEMP-S
62 FAN-S
61 COVER-S
60 LAMP-S
59 1/2
58 V/R
57 SYNC-CH
56 STATE
55 V-POL
54 H-POL
53 DAT
52 CLK1
51 SELN
50 CS1
49 SC1
48 SCO
47 CALIB
46 DET
45 STUP1
44 TIME-RST
43 KEYI-2
42 KEYI-1
41 KEYI-0
25 VSYNC
26 CNVSS
27 RESET
28 MOUSE
29 NC
30 XIN
31 XOUT
32 VSS
33 LED-R
34 LED-G
35 LED-LAMP
36 LED-TEMP
37 KEYO-0
38 KEYO-1
39 KEYO-2
40 KEYO-3
12V
5V-1
V-RAMP
VD
JUDGE
NT60
REMOTE
ST+5V
N213
N218
222N
1 2 3 4 5 6 7 8 9 10
C H I F D G

V-PULSE
MUTE
V-SYNC
H-SYNC-B
CGV
H-PULSE
HARU
RGB. V
RGB. H
PAL
NTSC
CP
D/E
INT
MACB
SYNC. CH
STATE
V-POL
H-POL
1/2
V/R

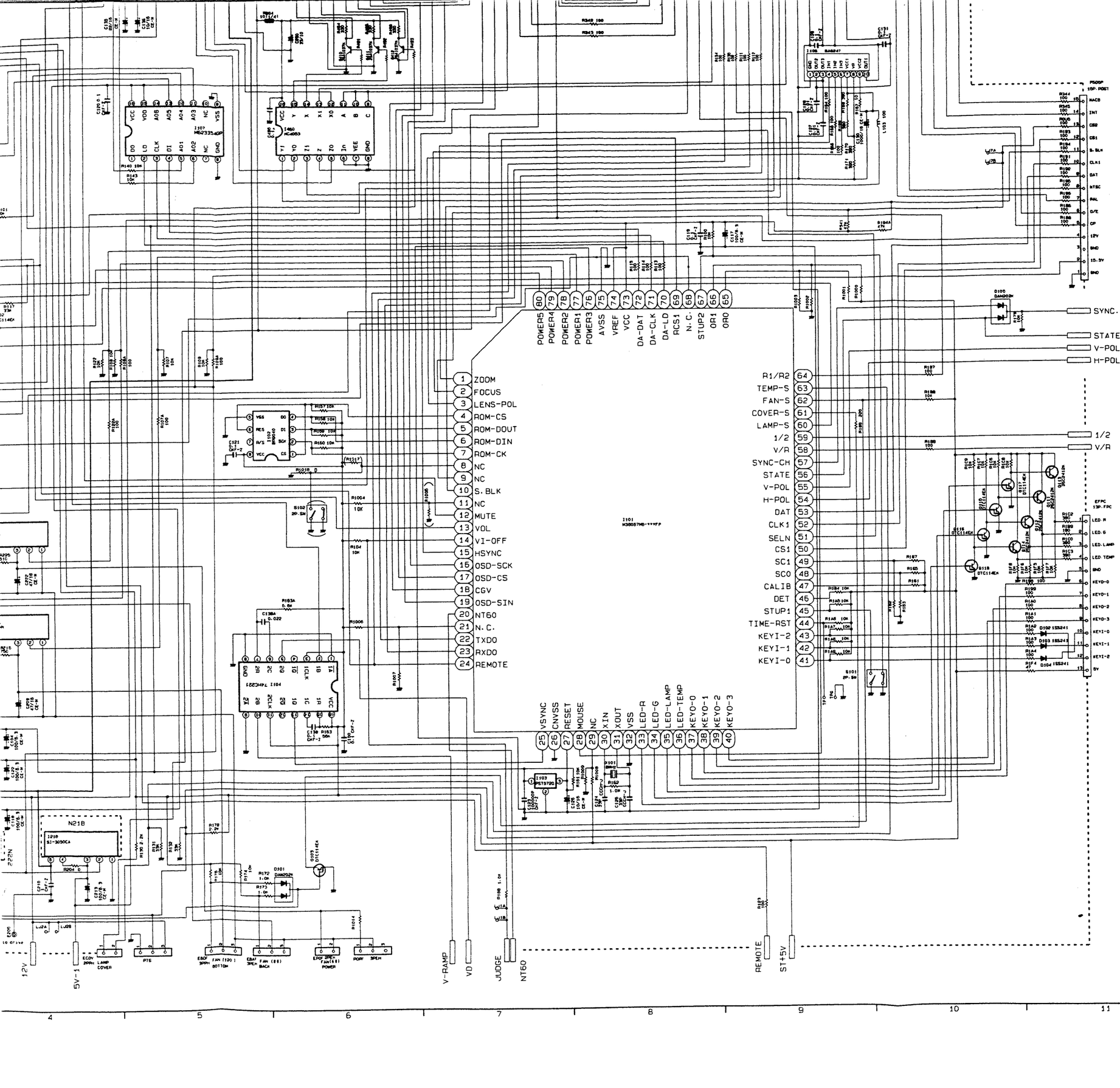
1 ZOOM
2 FOCUS
3 LENS-POL
4 ROM-CS
5 ROM-DOUT
6 ROM-DIN
7 ROM-CK
8 NC
9 NC
10 S. BLK
11 NC
12 MUTE
13 VOL
14 VI-OFF
15 HSYNC
16 OSD-SCK
17 OSD-CS
18 CGV
19 OSD-SIN
20 NT60
21 N. C.

POWER5 80
POWER4 79
POWER2 78
POWER1 77
POWER3 76
AVSS 75
VREF 74
VCC 73
DA-DAT 72
DA-CLK 71
DA-LD 70
RCS1 69
N. C. 68
STUP2 67
OR1 66
OR0 65

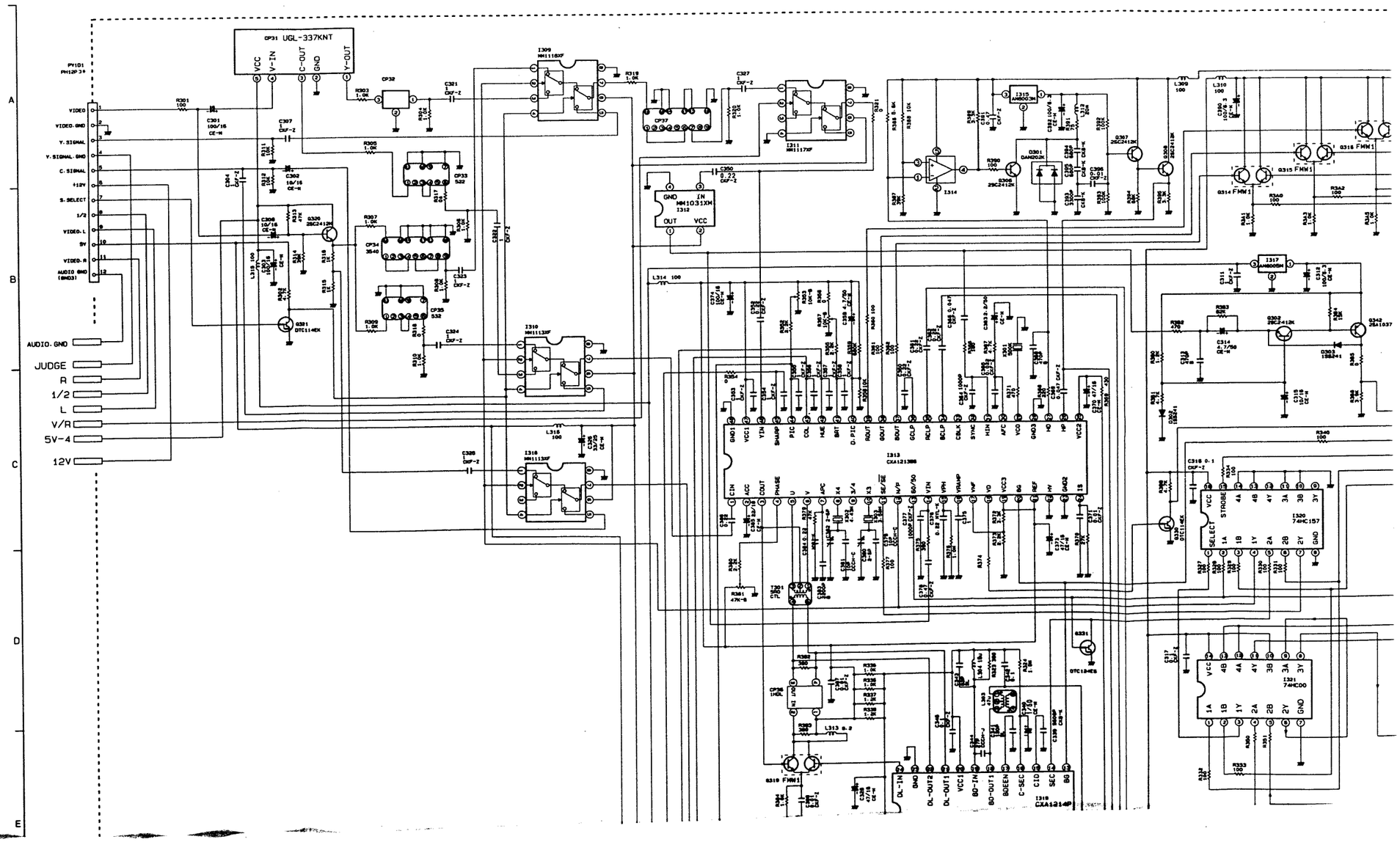
R1/R2 64
TEMP-S 63
FAN-S 62
COVER-S 61
LAMP-S 60
1/2 59
V/R 58
SYNC-CH 57
STATE 56
V-POL 55
H-POL 54
DAT 53
CLK1 52
SELN 51
CS1 50
SC1 49
SC0 48
CALIB 47
DET 46
STUP1 45
TIME-RST 44
KEY1-2 43

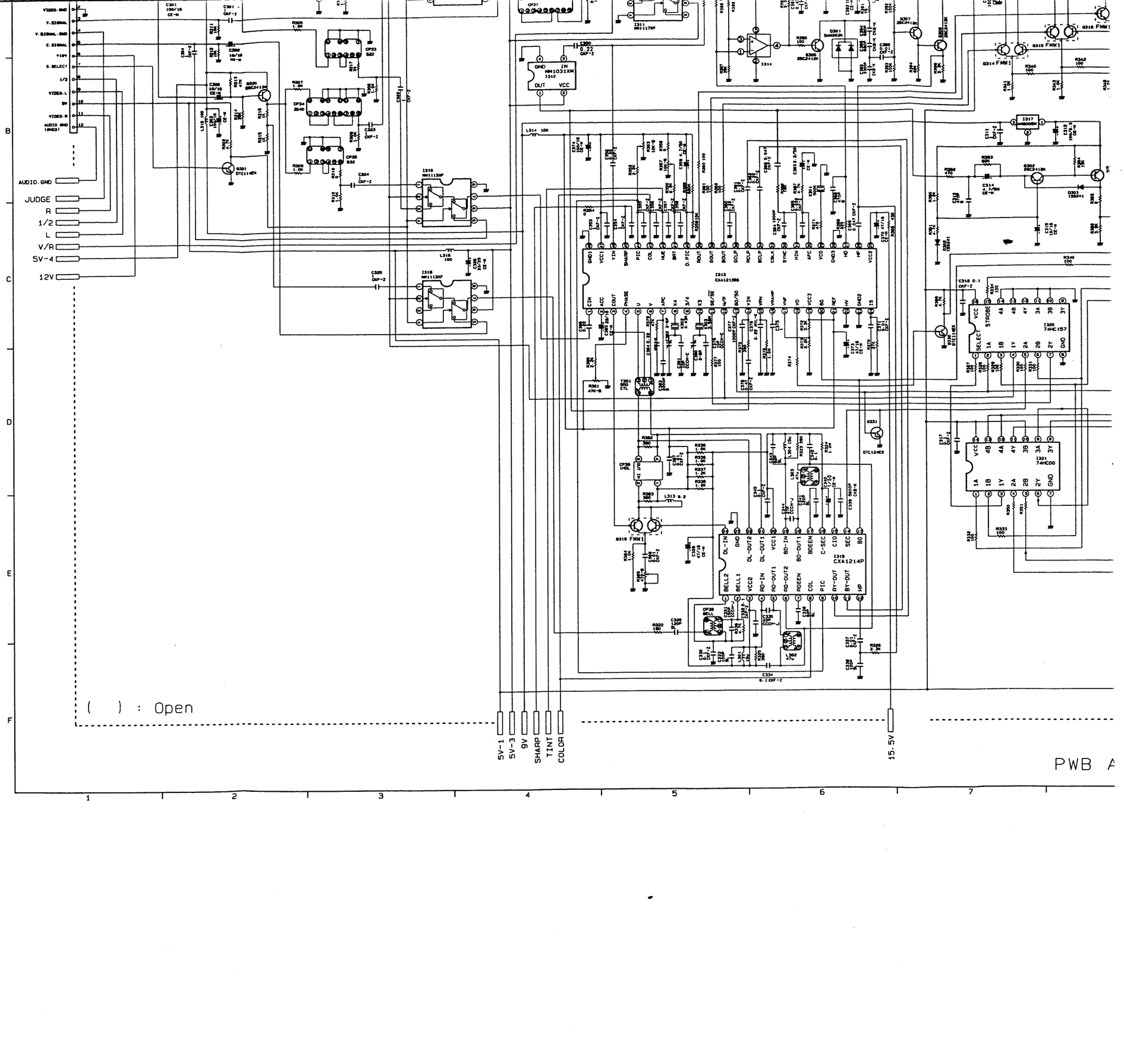
P505P 15P. POST
MACB
INT
CSD
CS1
S. SLK
CLK1
DAT
NTSC
PAL
D/E
CP
12V
GND
15. 3V
GND

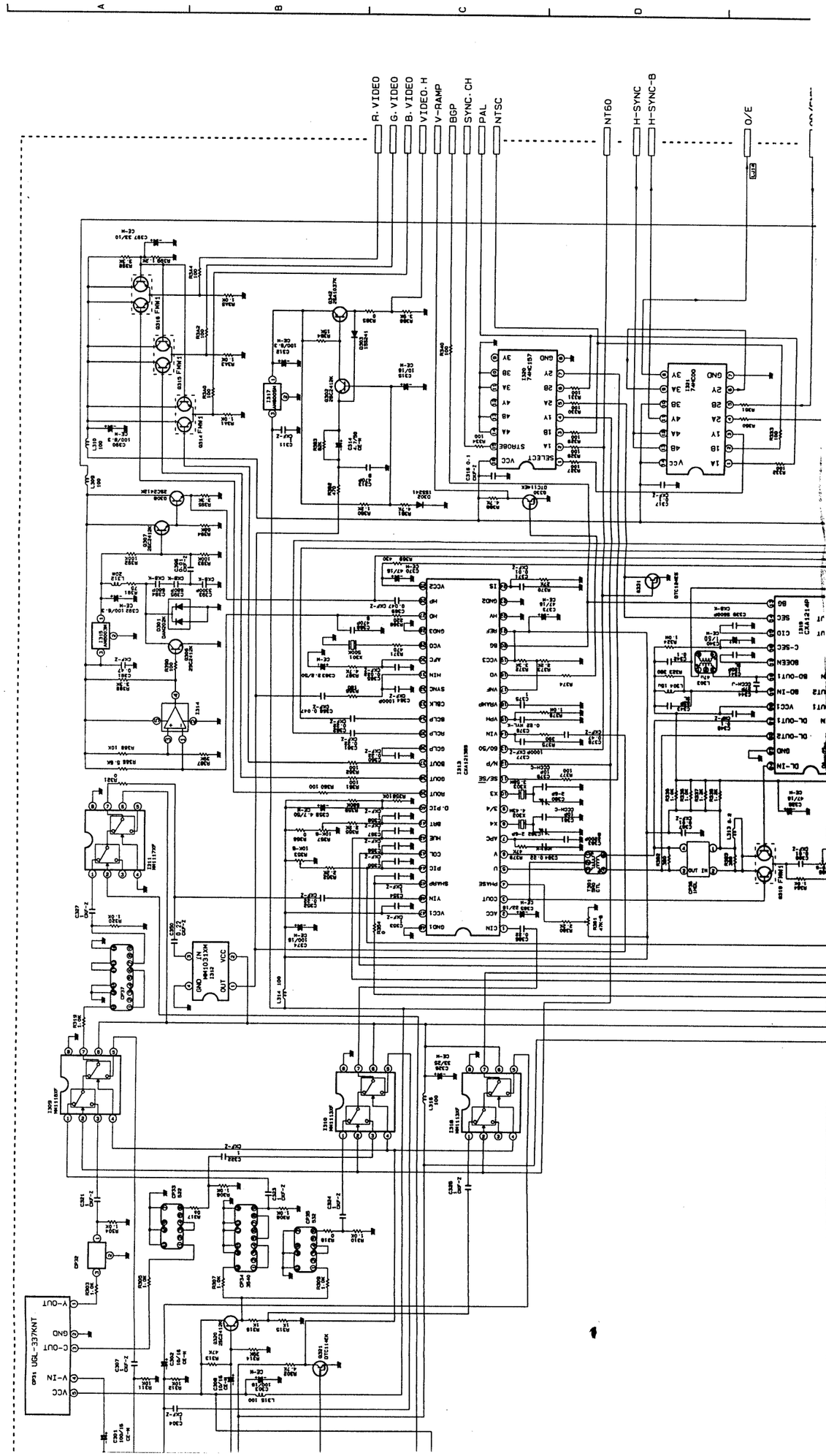
EFPC 13P. FPC
LED. R
LED. G
LED. LAMP
LED. TEMP
GND
KEY0-0
KEY0-1
KEY0-2
KEY0-3
KEY1-0

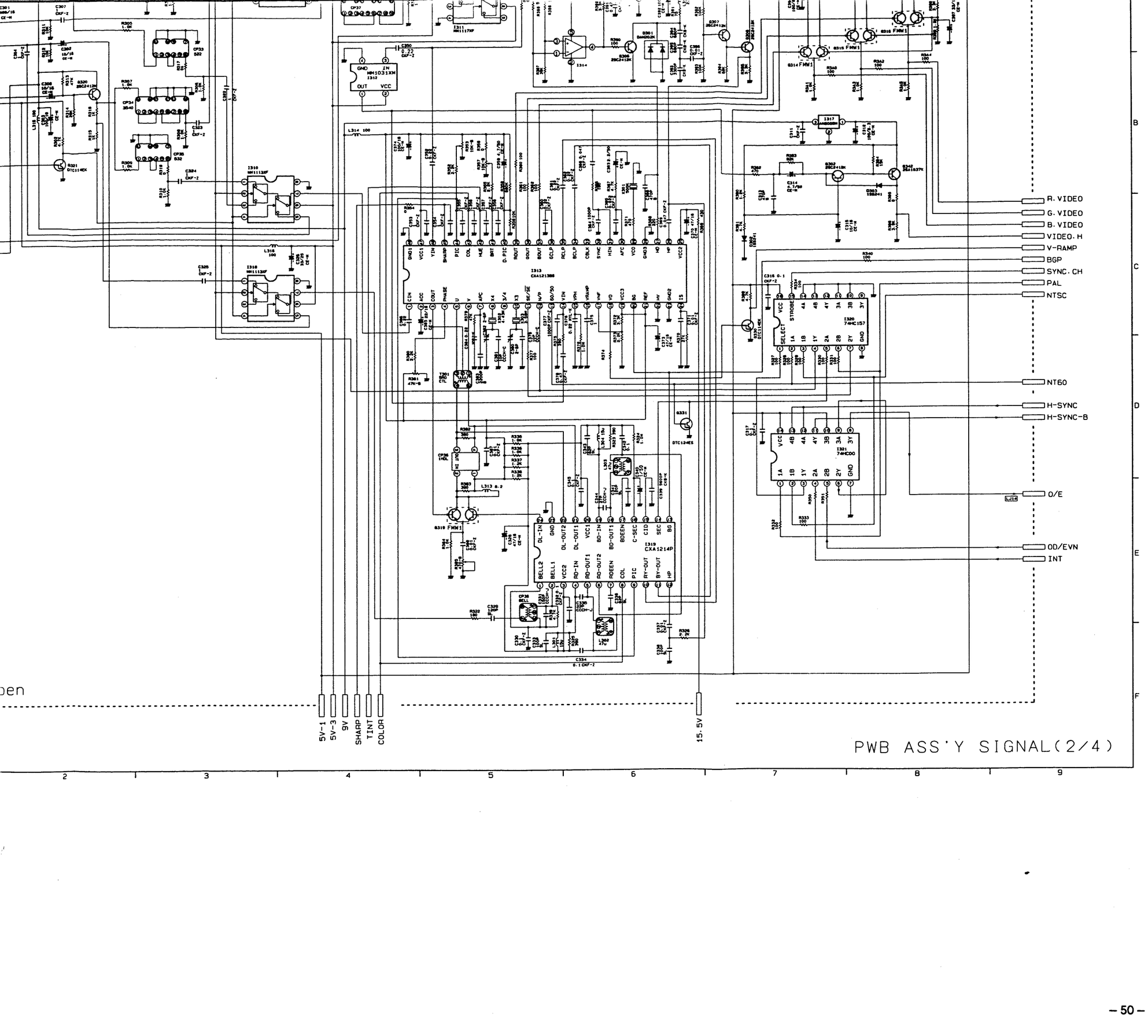

1 ZOOM
2 FOCUS
3 LENS-POL
4 ROM-CS
5 ROM-DOUT
6 ROM-DIN
7 ROM-CK
8 NC
9 NC
10 S.BLK
11 NC
12 MUTE
13 VOL
14 VI-OFF
15 HSYNC
16 OSD-SCK
17 OSD-CS
18 CGV
19 OSD-SIN
20 NT60
21 N.C.
22 TXDO
23 RXDO
24 REMOTE
25 VSYNC
26 CNVSS
27 RESET
28 MOUSE
29 NC
30 XIN
31 XOUT
32 VSS
33 LED-R
34 LED-G
35 LED-LAMP
36 LED-TEMP
37 KEYO-0
38 KEYO-1
39 KEYO-2
40 KEYO-3
41 KEYI-0
42 KEYI-1
43 KEYI-2
44 TIME-RST
45 STUP1
46 DET
47 CALIB
48 SC0
49 SC1
50 CS1
51 SELN
52 CLK1
53 DAT
54 H-POL
55 V-POL
56 STATE
57 SYNC-CH
58 V/R
59 1/2
60 LAMP-S
61 COVER-S
62 FAN-S
63 TEMP-S
64 R1/R2
65 OR0
66 OR1
67 STUP2
68 N.C.
69 RCS1
70 DA-LD
71 DA-CLK
72 DA-DAT
73 VCC
74 VREF
75 AVSS
76 POWER3
77 POWER1
78 POWER2
79 POWER4
80 POWER5
SYNC. CH
STATE
V-POL
H-POL
1/2
V/R
LED R
LED G
LED. LAMP
LED. TEMP
GND
KEY0-0
KEY0-1
KEY0-2
KEY0-3
KEY1-0
KEY1-1
KEY1-2
5V
12V
5V-1
V-RAMP
VD
JUDGE
NT60
REMOTE
5T+5V
PWB ASS'Y SIGNAL(1/4)

CP-L850WX
CP-L850E

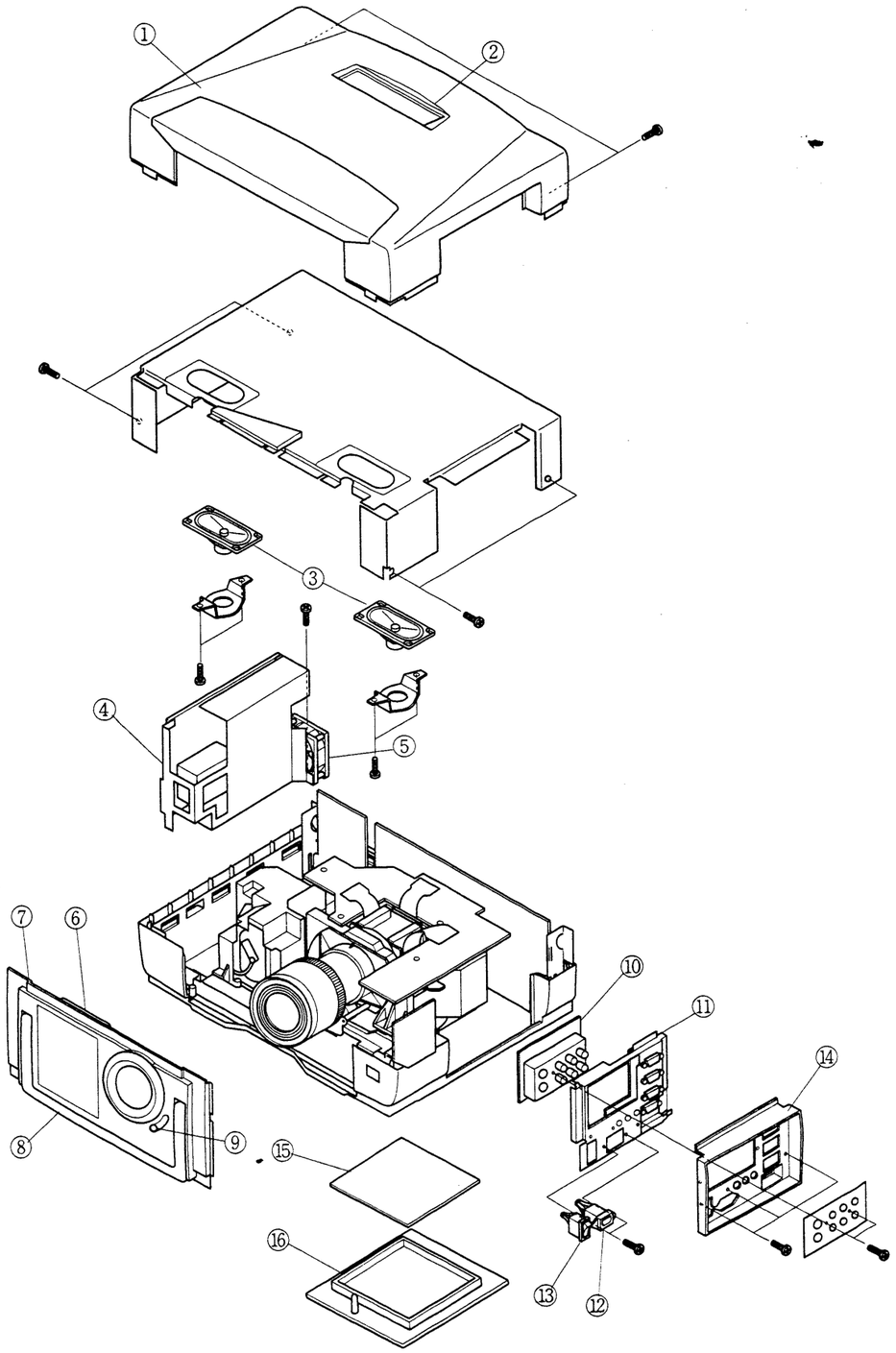


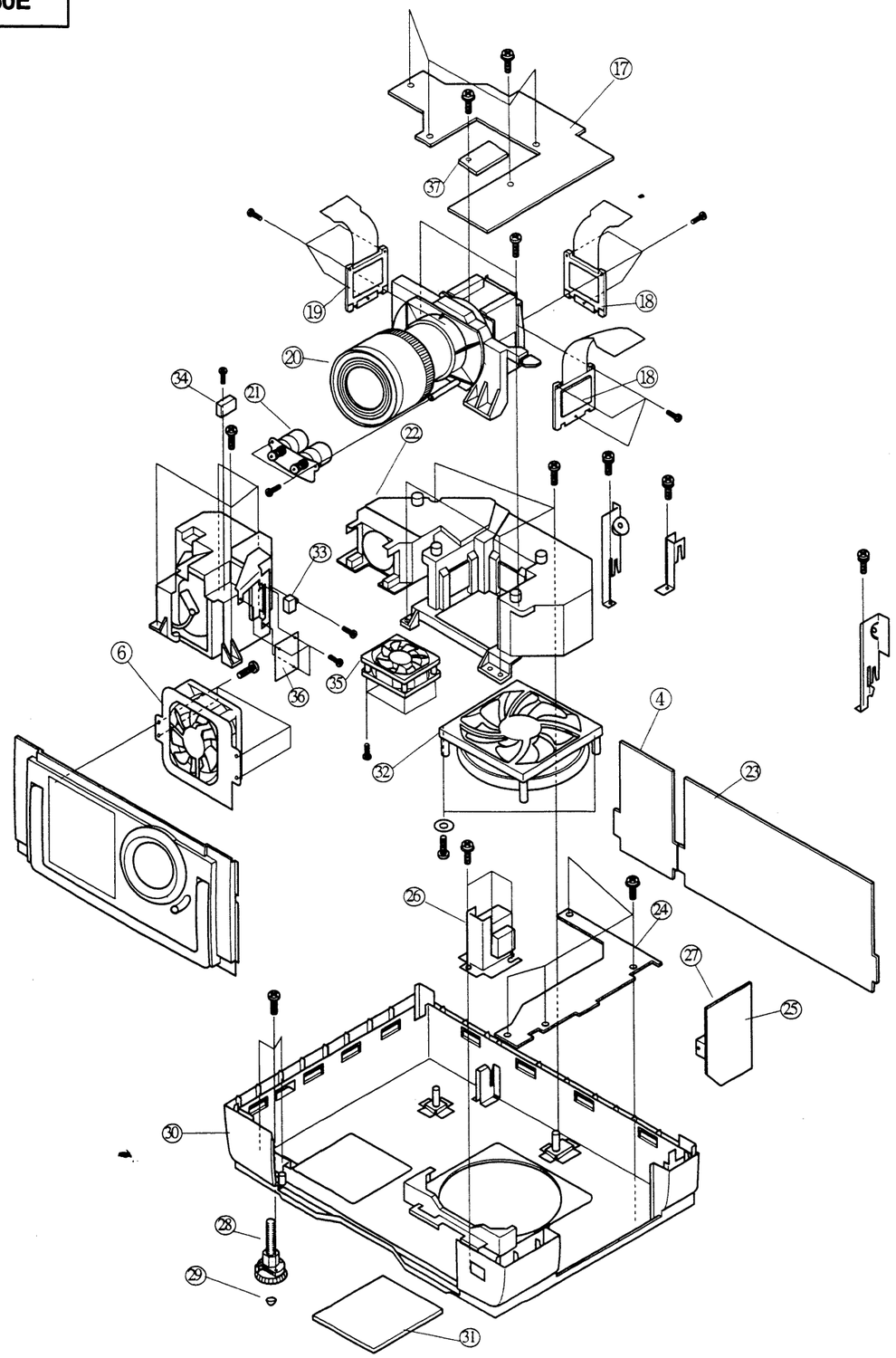

AUDIO. GND
JUDGE
R
1/2
L
V/R
5V-4
12V
( ) : Open
5V-1
5V-3
9V
SHARP
TINT
COLOR
15.5V
PWB A


A
B
C
D
R. VIDEO
G. VIDEO
B. VIDEO
VIDEO. H
V-RAMP
BGP
SYNC. CH
PAL
NTSC
NT60
H-SYNC
H-SYNC-B
O/E
OPS1 UGL-337KNT
V-OUT
GND
C-OUT
V-IN
VCC


R. VIDEO
G. VIDEO
B. VIDEO
VIDEO. H
V-RAMP
BGP
SYNC. CH
PAL
NTSC
NT60
H-SYNC
H-SYNC-B
O/E
OD/EVN
INT
5V-1
5V-3
9V
SHARP
TINT
COLOR
15.5V
CXA1214P
CXA1213BS
74HC157
74HC00
DTC124ES
DTC114EK
2SC2412K
2SA1037K
PWB ASS'Y SIGNAL(2/4)

12. Disassembly diagram





13. Replacement Parts list

REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE : Components marked with a ⚠ have special characteristics important to safety. Before replacing any of there components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PARTS NO.	DESCRIPTION	SYMBOL NO.	PARTS NO.	DESCRIPTION
1	QD04856	UPPER CASE ASS'Y	29	PE00051	RUBBER FOOT
2	HP00337	OPERATION PANEL SWITCH UNIT	30	QD04865	BOTTOM CASE ASS'Y
3	GK00251	SPEAKER (4 x 7)	31	QD05843	LAMP COVER
4 ⚠	HA00431	POWER UNIT	32	GS00211	DC FAN (INTAKE)
5	GS00261	DC FAN (POWER)	33 ⚠	FU00253	THERMAL SENSOR SWITCH
6	GS00151	DC FAN (EXHAUST)	34	FH00041	LIMIT SWITCH (MICRO SWITCH)
7	QD04871	FRONT BEZEL ASS'Y	35	GS00231	DC FAN (PBS)
8	PV00171	HANDLE	36	JP02635	PWB ASS'Y CORRECTION COLOR
9	MD02681	LENS BARRIER UNIT	37	JP02691	PWB ASS'Y SENSOR
10	JP02215	PWB ASS'Y INPUT TERMINAL VIDEO			
11 ⚠	JP02216	PWB ASS'Y INPUT TERMINAL RGB	⚠	EV00641	POWER SUPPLY CORD (CONTINENTAL TYPE)
12 ⚠	EP00011	AC INLET WITH FILTER	⚠	EV00341	POWER SUPPLY CORD (U.K. TYPE)
13	FH00033	POWER SWITCH		EW10933	CABLE. AV
14	QD04921	I/O HOLDER		EW04101	VGA SIGNAL CABLE
15	MU00413	AIR FILTER B		EY00362	MAC ADAPTER
16	QD04738	FILTER COVER		HL00671	REMOTE CONTROL TRANSMITTER
17	JP02185	PWB ASS'Y DRIVE		EW02751	CABLE. MOUSE PS/2
18	UX03911	LCD MODULE ASS'Y R/G		EW02741	ADB MOUSE CABLE
19	UX03912	LCD MODULE ASS'Y B			
20	KS01406	LENS PRISM ASS'Y			
21	GP00172	DC MOTOR ASS'Y			
22 ⚠	UE05251	DICHROIC OPTICS UNIT			<ONLY CP-L850WX>
23	JP02784B	PWB ASS'Y SIGNAL	⚠	EV00631	POWER SUPPLY CORD (UL/CSA TYPE)
24	JP02218	PWB ASS'Y MOTHER		EW02721	RS232C CABLE
25	JP02217	PWB ASS'Y FILTER			
26	BV00831	PL CHOKE COIL			<ONLY CP-L850E>
27 ⚠	FN00141	FUSE		EW02731	SERIAL MOUSE CABLE
28	QJ00235	ADJUST FOOT			